

NOTES

- ANY EXCEPTIONS TO THE STANDARD PLAN MAY BE APPROVED BY THE CITY ENGINEER.
- "SEWER" INCLUDES SANITARY SEWER, COMBINED SEWER AND SIDE SEWER.
- WHERE MINIMUM CLEARANCES CANNOT BE MET, SEWER SHALL BE CONSTRUCTED OF MATERIALS AND WITH JOINTS THAT ARE EQUIVALENT TO WATER MAIN STANDARDS INCLUDING WATER MAIN PRESSURE TESTING REQUIREMENTS.
- NO VERTICAL CLEARANCE REQUIRED.
- IF VERTICAL SEPARATION CANNOT BE MET, WATER MAIN SHALL BE A STANDARD SINGLE 18'-0" NOMINAL LENGTH DUCTILE IRON WATER MAIN SECTION CENTERED AT THE POINT OF CROSSING.
- SEWER SHALL HAVE ADEQUATE FOUNDATION SUPPORT TO PREVENT SETTLEMENT ON THE WATER MAIN AND TO PREVENT DEFLECTION OF WATER MAIN JOINTS.
- CROSSINGS AT AN ANGLE BETWEEN 90° AND 45° MAY OCCUR BETWEEN 9'-0" AND 6'-0" OF WATER MAIN JOINT FOR CROSSINGS LESS THAN 45°, SEE NOTE 1.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

WATER & SEWER CLEARANCES AND MATERIAL REQUIREMENTS

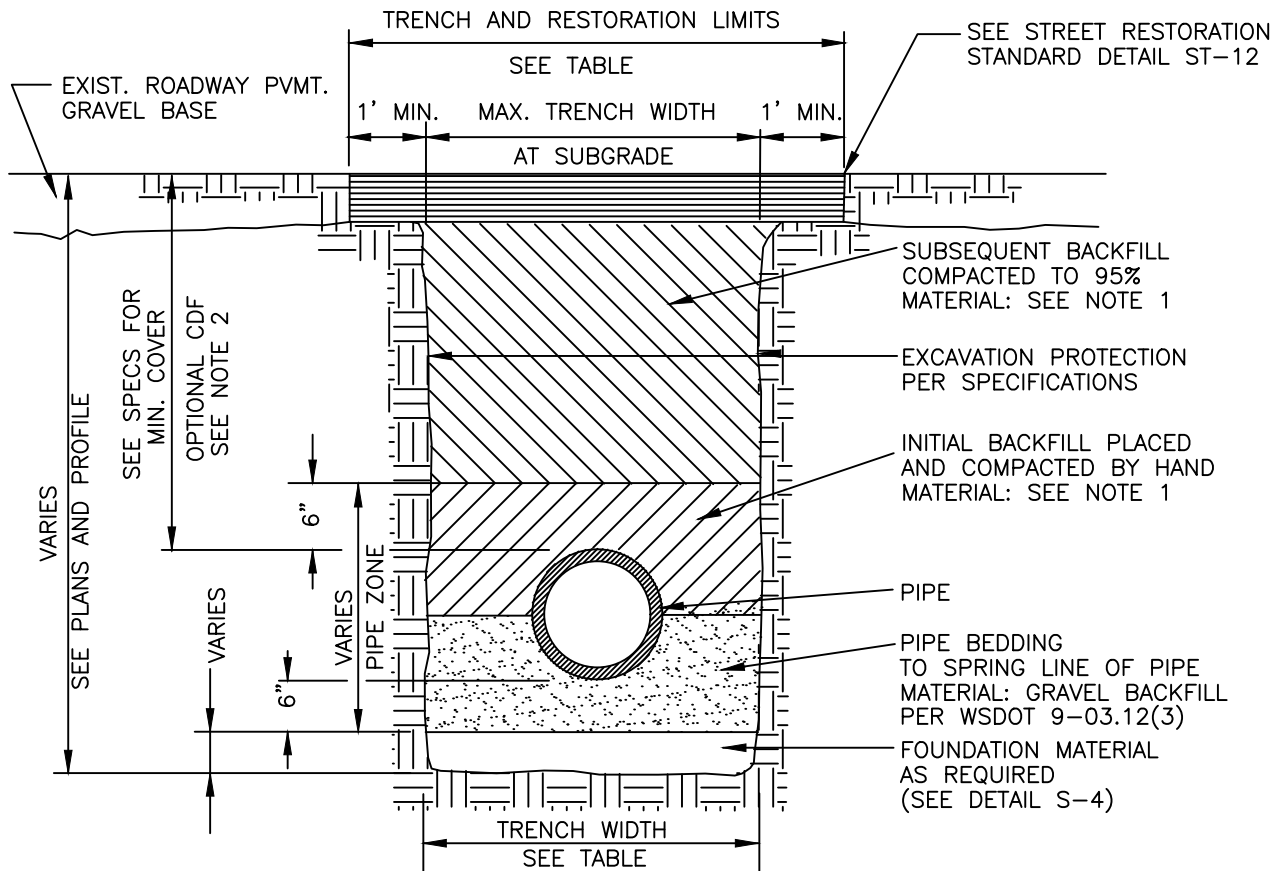
6-5-2009

NO SCALE

S-2

REV DATE

APPROVED



NOTES

1. ALL TRENCH BACKFILL IN PUBLIC RIGHT-OF-WAY OR ROADWAY AREAS SHALL BE CRUSHED SURFACING PER WSDOT 9-09.9(3) OR BANK RUN GRAVEL PER WSDOT 9-03.19, COMPACTED IN 6" LIFTS.
2. CDF FOR BACKFILL MAY BE REQUIRED BY CITY ENGINEER WHEN PROPER COMPACTION AROUND EXISTING UTILITIES MAY NOT BE POSSIBLE. CDF SHALL BE PER WSDOT 2-09.3(1)E.
3. SEE S-4 FOR PIPE BEDDING DETAILS.

TRENCH WIDTH

| | PIPE ZONE MAX. | MAX. TRENCH WIDTH AT | MAX. RESTORATION WIDTH AT |
|------------|-------------------|-------------------------|------------------------------|
| PIPE SIZE | TRENCH WIDTH | SUBGRADE | SURFACE |
| SIDE SEWER | 2'-0" | 2'-0" | 6'-0" |
| 4" OR 6" | 2'-2" | 3'-0" | 8'-0" |
| 8" | 2'-4" | 4'-0" | 8'-0" |
| 10" | 2'-6" | 4'-0" | 8'-0" |
| 12" | 2'-8" | 4'-6" | 8'-6" |



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

SEWER TRENCH DETAIL

6-5-2009

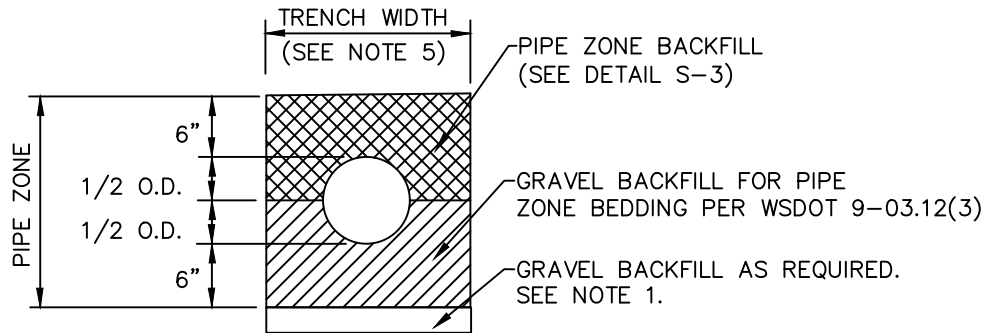
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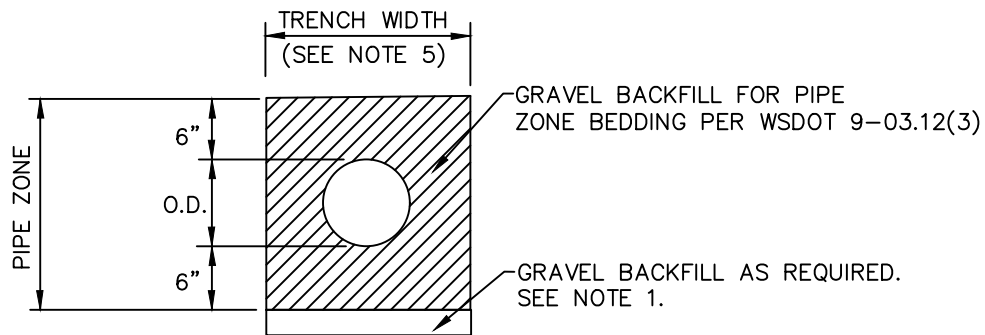
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BEDDING FOR RIGID PIPE MATERIAL



BEDDING FOR FLEXIBLE PIPE MATERIAL



NOTES

1. EXCAVATE UNSTABLE MATERIAL DOWN TO FIRM SOIL. REPLACE WITH GRAVEL BACKFILL PER WSDOT 9-03.12(3) AS DIRECTED BY THE CITY ENGINEER.
2. PROVIDE UNIFORM SUPPORT UNDER BARREL.
3. HAND TAMP UNDER HAUNCHES.
4. COMPACT BEDDING AND BACKFILL MATERIAL TO 95% MAX. DENSITY EXCEPT DIRECTLY OVER PIPE. HAND TAMP ONLY UNTIL MINIMUM 6" ABOVE TOP OF PIPE.
5. 30" MAXIMUM TRENCH WIDTH FOR PIPE UP TO AND INCLUDING 12", FOR PIPE LARGER THAN 12", USE O.D. PLUS 16".



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

PIPE BEDDING

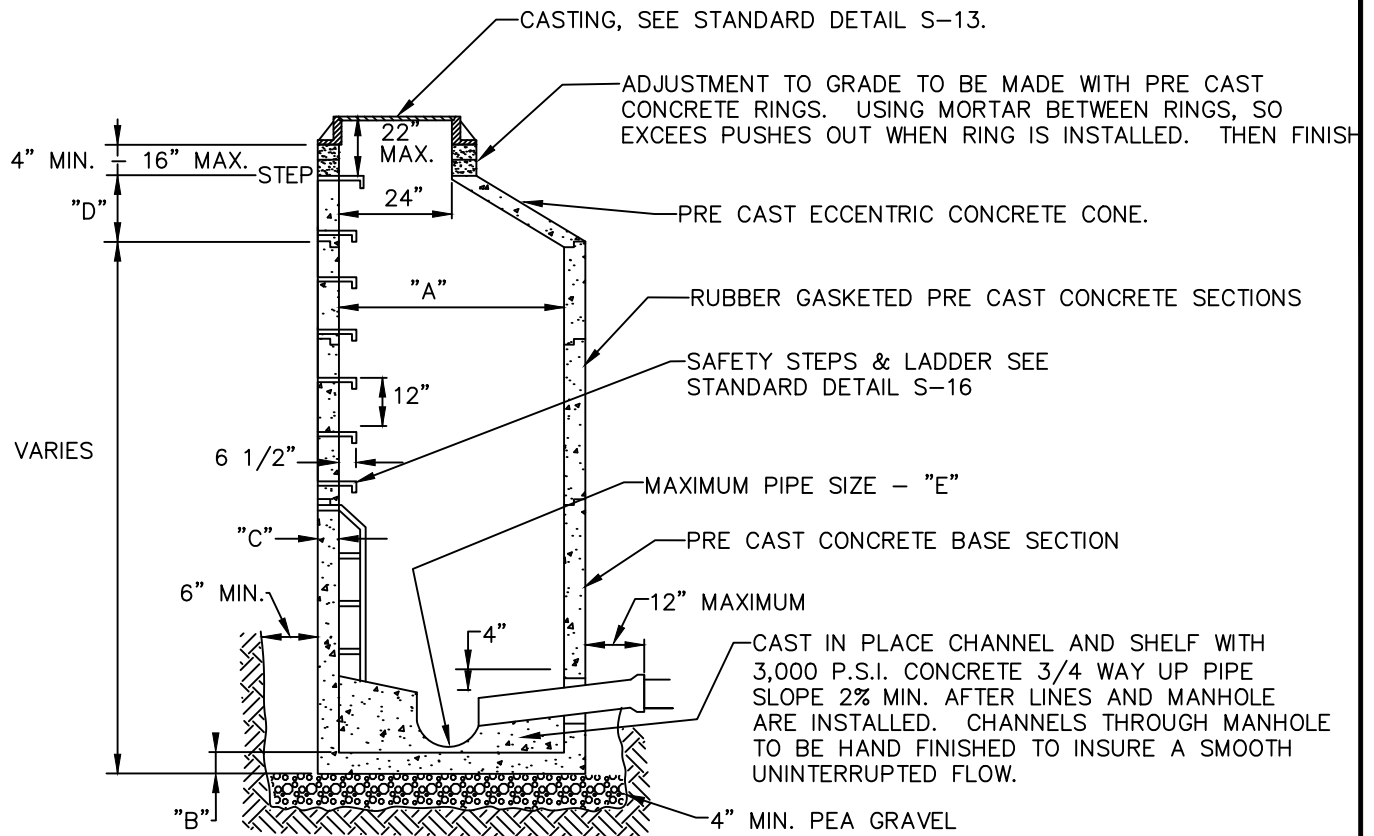
6-5-2009

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S-4

REV DATE

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| | "A" | "B" | "C" | "D" | "E" |
|--------|-----|---------|-----------|----------|----------|
| 48" MH | 48" | 6" MIN. | 5" MIN. | 24" MIN. | 21" I.D. |
| 54" MH | 54" | 8" MIN. | 5.5" MIN. | 24" MIN. | 24" I.D. |
| 60" MH | 60" | 8" MIN. | 6" MIN. | 42" MIN. | 30" I.D. |

NOTES

- PRE CAST SECTIONS SHALL BE REINFORCED PER ASTM SPECS FOR CORRESPONDING SEWER PIPE.
- SAFETY STEPS, 1" MINIMUM, SEE STANDARD DETAILS S-16. STEPS IN PRE CAST BASE SECTION MAY BE CAST IN PLACE OR MOVABLE SAFETY LADDER GROUTED IN PLACE.
- ALL HOLES FOR PIPE SHALL BE BLOCKED OUT AT THE TIME OF CASTING THE SECTION.
- ALL RUBBER GASKETED MANHOLES SHALL BE FURNISHED WITH RUBBER GASKET JOINT CONFORMING ASTM C-443.
- MINIMUM 2% SLOPE ACROSS MANHOLE.
- SEE STANDARD DETAIL S-13 FOR MANHOLE FRAME AND COVER.
- CONNECTION TO MANHOLE WITH PVC PIPE REQUIRES A PVC x CONCRETE ADAPTER.
- ALL PIPE THROUGH MANHOLE WALL SHALL HAVE A "KOR-N-SEAL" WITH "WEDGE KORBAND" MANUFACTURED BY NPC. INC. OR APPROVED EQUAL.
- BEDDING AND FOUNDATION MATERIAL REQUIRED AS SHOWN ON DETAIL AND AS NOTED IN THE SPECIFICATIONS.
- LOCATION OF MANHOLE STEPS SHALL NOT BE OVER FLOW LINES AND SHALL BE APPROVED BY THE CITY ENGINEER.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

TYPE 1 MANHOLE 48" - 60"

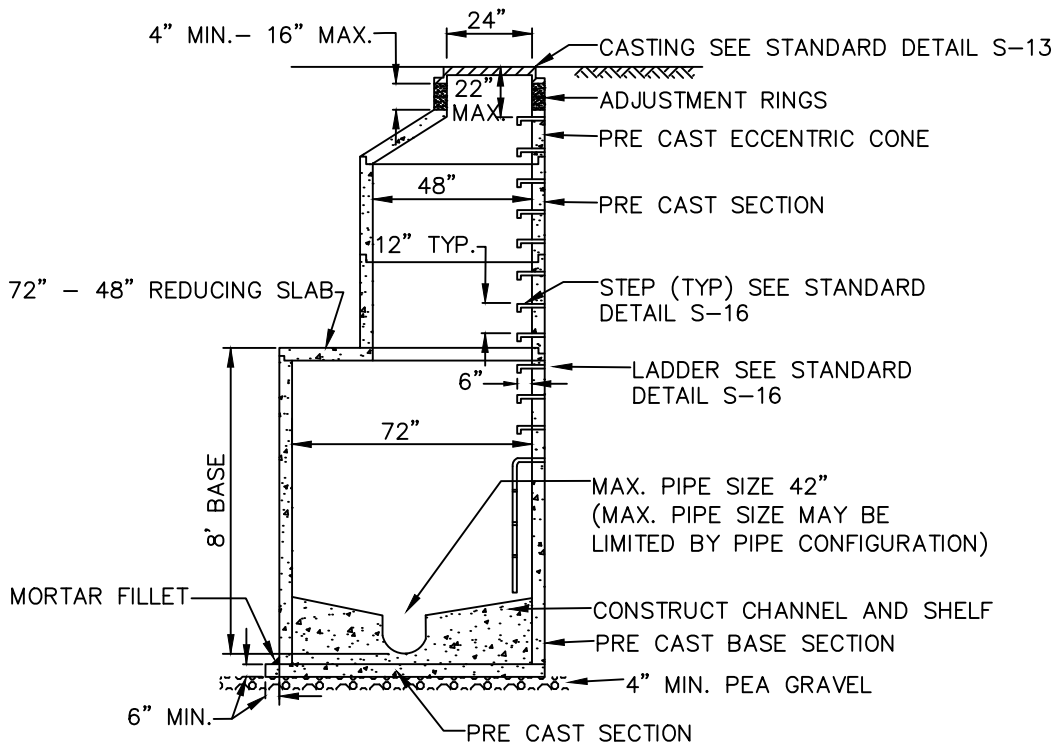
6-5-2009

NO SCALE

S-5

REV DATE

APPROVED



72" MANHOLE

NOTES

1. PRE CAST SECTIONS SHALL BE REINFORCED PER ASTM SPECS FOR CORRESPONDING SEWER PIPE.
2. SAFETY STEPS, 1" MINIMUM, SEE STANDARD DETAILS S-16. STEPS IN PRE CAST BASE SECTION
3. MAY BE CAST IN PLACE OR MOVABLE SAFETY LADDER GROUTED IN PLACE.
4. ALL HOLES FOR PIPE SHALL BE BLOCKED OUT AT THE TIME OF CASTING THE SECTION.
5. ALL RUBBER GASKETED MANHOLES SHALL BE FURNISHED WITH RUBBER GASKET JOINT CONFORMING
6. ASTM C-443.
7. MINIMUM 2% SLOPE ACROSS MANHOLE.
8. SEE STANDARD DETAIL S-13 FOR MANHOLE FRAME AND COVER.
9. CONNECTION TO MANHOLE WITH PVC PIPE REQUIRES A PVC x CONCRETE ADAPTER.
10. ALL PIPE THROUGH MANHOLE WALL SHALL HAVE A "KOR-N-SEAL" WITH "WEDGE KORBAND"
11. MANUFACTURED BY NPC. INC. OR APPROVED EQUAL.
12. BEDDING AND FOUNDATION MATERIAL
13. REQUIRED AS SHOWN ON DETAIL AND AS
14. NOTED IN THE SPECIFICATIONS.
15. LOCATION OF MANHOLE STEPS SHALL NOT BE
16. OVER FLOW LINES AND SHALL BE APPROVED
17. BY THE CITY ENGINEER.
18. SEE STANDARD DETAIL S-15 FOR THE
19. INSTALLATION OF A MANHOLE OVER AN
20. EXISTING SEWER LINE.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

TYPE II MANHOLE - 72"

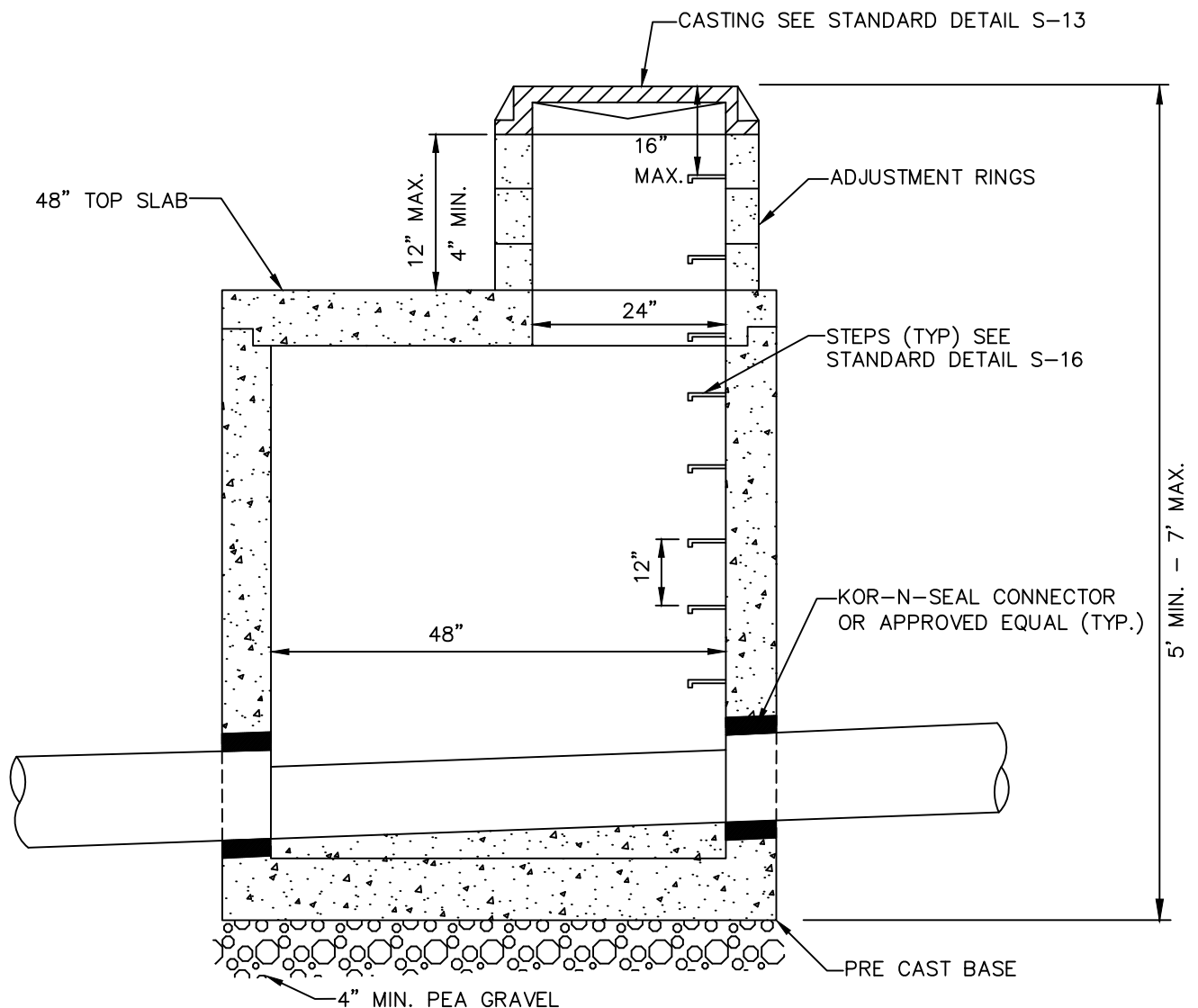
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S-6

REV DATE

APPROVED



NOTES

1. PRE CAST SECTIONS SHALL BE REINFORCED PER ASTM SPECS FOR CORRESPONDING SEWER PIPE.
2. SAFETY STEPS, 1" MINIMUM, SEE STANDARD DETAILS S-16. STEPS IN PRE CAST BASE SECTION MAY BE CAST IN PLACE OR MOVABLE SAFETY LADDER GROUTED IN PLACE.
3. ALL HOLES FOR PIPE SHALL BE BLOCKED OUT AT THE TIME OF CASTING THE SECTION.
4. ALL RUBBER GASKETED MANHOLES SHALL BE FURNISHED WITH RUBBER GASKET JOINT CONFORMING ASTM C-443.
5. MINIMUM 2% SLOPE ACROSS MANHOLE.
6. SEE STANDARD DETAIL S-13 FOR MANHOLE FRAME AND COVER.
7. CONNECTION TO MANHOLE WITH PVC PIPE REQUIRES A PVC x CONCRETE ADAPTER.
8. ALL PIPE THROUGH MANHOLE WALL SHALL HAVE A "KOR-N-SEAL" WITH "WEDGE KORBAND" MANUFACTURED BY NPC. INC. OR APPROVED EQUAL.
9. BEDDING AND FOUNDATION MATERIAL REQUIRED AS SHOWN ON DETAIL AND AS NOTED IN THE SPECIFICATIONS.
10. LOCATION OF MANHOLE STEPS SHALL NOT BE OVER FLOW LINES AND SHALL BE APPROVED BY THE CITY ENGINEER.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

48" SHALLOW MANHOLE ASSEMBLY

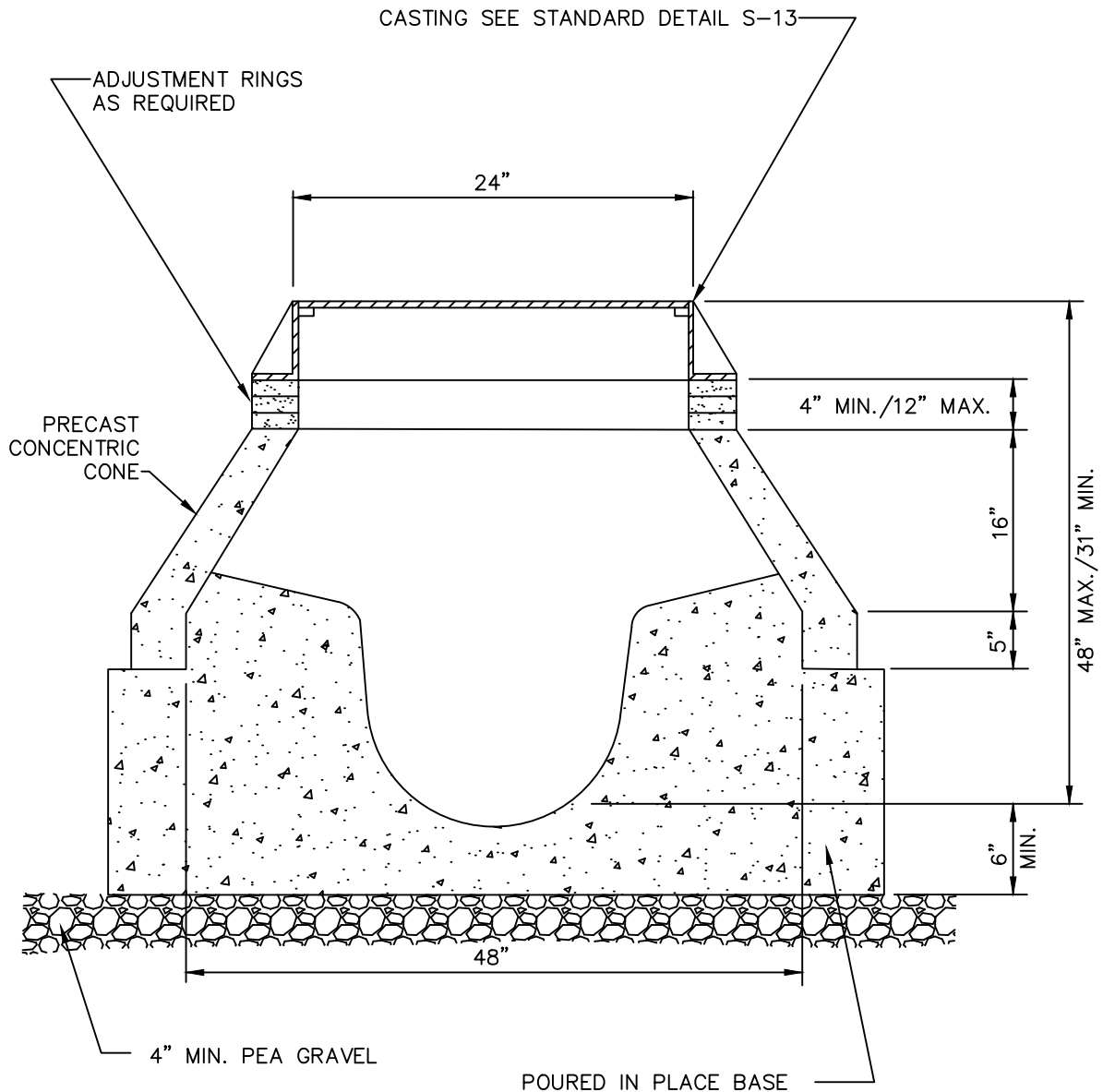
6-5-2009

NO SCALE

S-7

REV DATE

APPROVED



CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER

**EXTRA SHALLOW
MANHOLE ASSEMBLY**

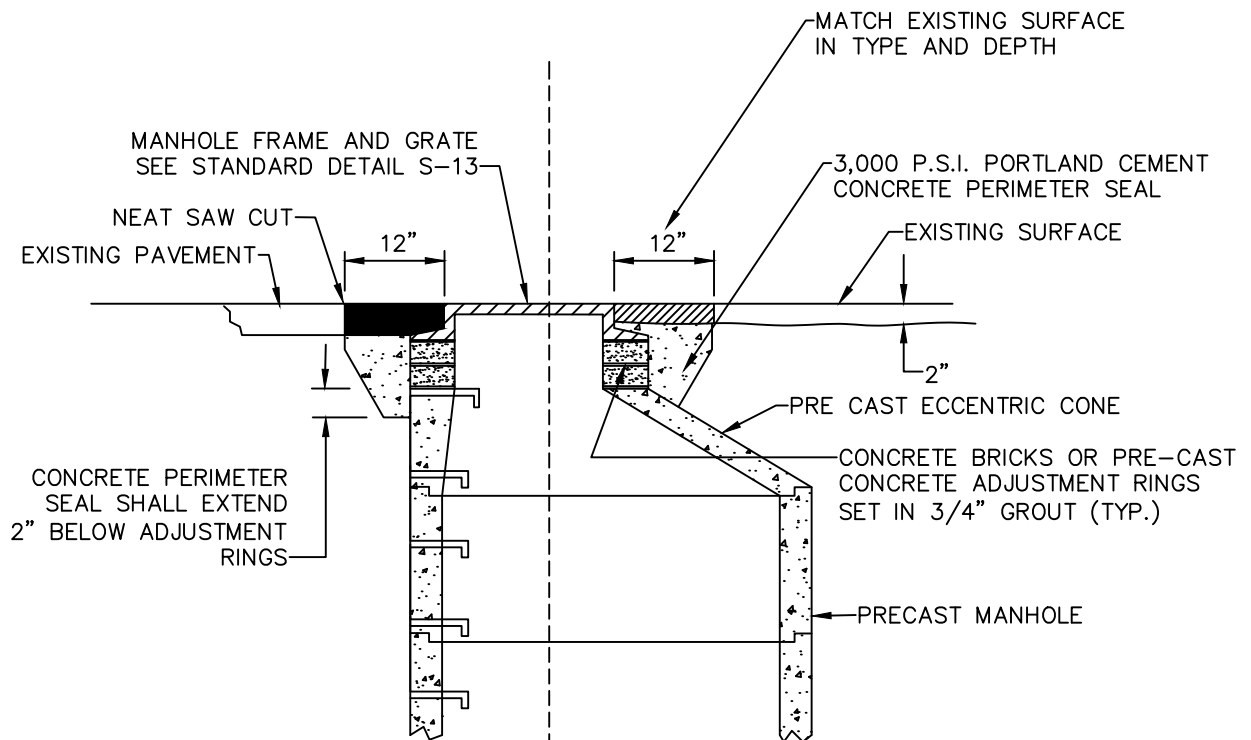
6-5-2009

NO SCALE

S-8

REV DATE

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PAVEMENT RESTORATION

GRAVEL OR NATIVE MATERIAL RESTORATION



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

**MANHOLE
ADJUSTMENT DETAIL**

6-5-2009

NO SCALE

S-9

REV DATE

APPROVED

8 FEET AND OVER

UNDER 8 FEET DEEP

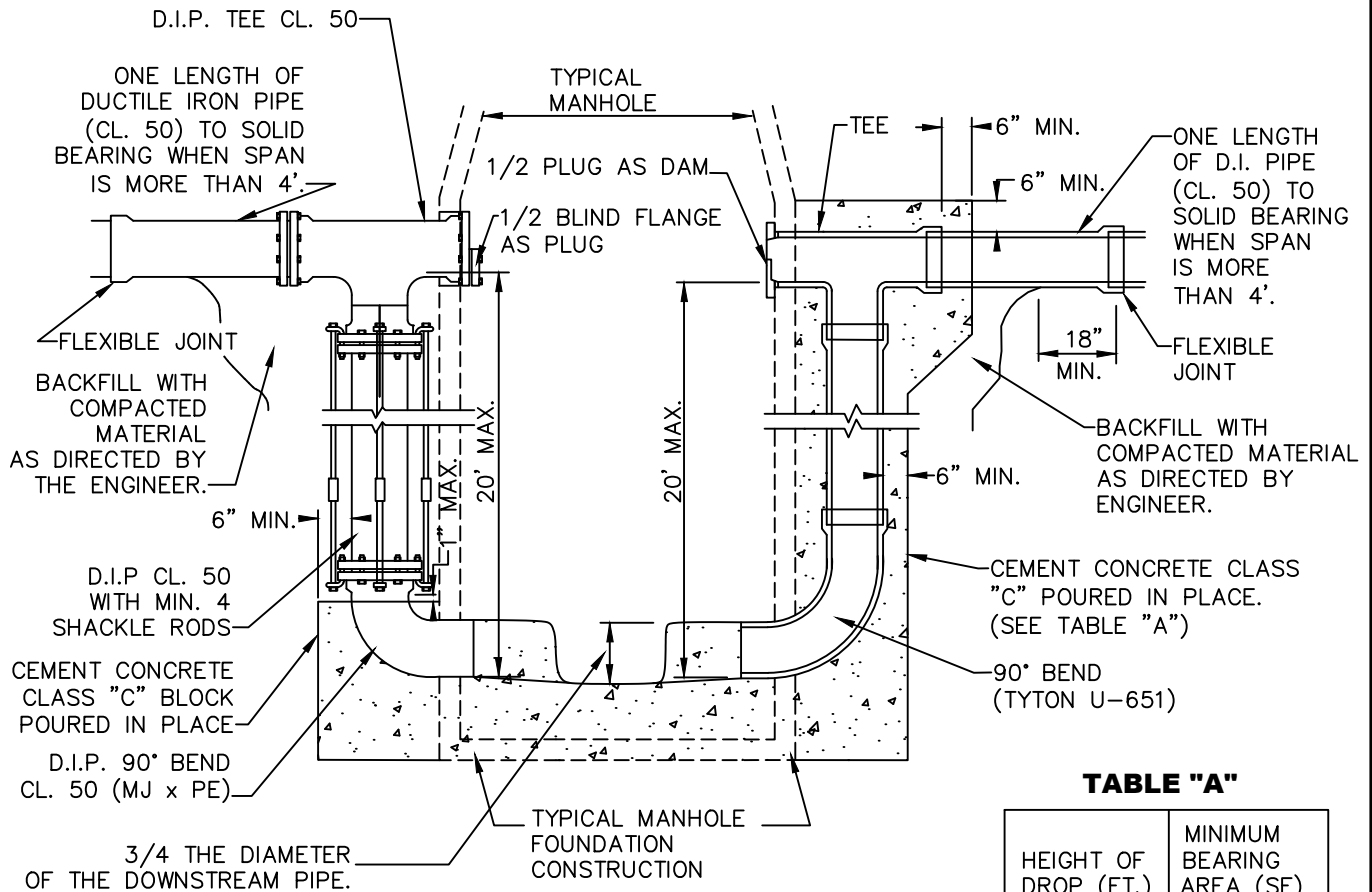
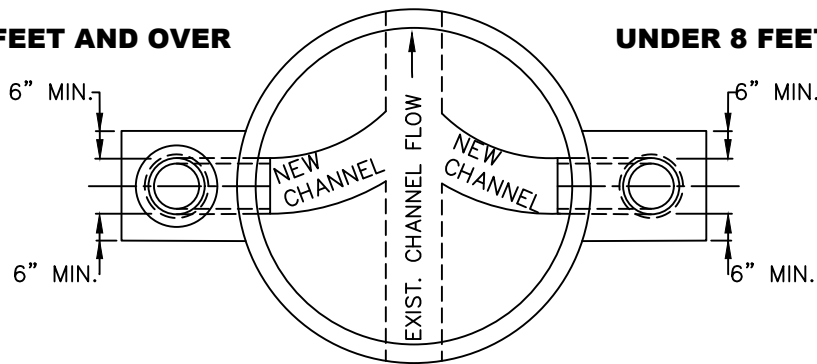


TABLE "A"

| HEIGHT OF DROP (FT.) | MINIMUM BEARING AREA (SF) |
|----------------------|---------------------------|
| 2.5 - 5 | 1.0 |
| 6 - 10 | 2.0 |
| 11 - 15 | 2.5 |
| 16 - 20 | 3.0 |
| 21 - 25 | 4.0 |

BEARING AREA BASED ON 2,000 P.S.I. BEARING LOAD (UP TO 18" DIAMETER PIPE).

NOTES

1. ALL DUCTILE IRON PIPE SHALL BE CL. 50.
2. OUTSIDE DROP STRUCTURE SHALL BE INSTALLED ONLY WHERE APPROVED BY THE CITY ENGINEER.
3. DROP TEE TO BE INSTALLED MINIMUM 3' BELOW CONE SECTION.



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

**OUTSIDE
DROP STRUCTURE**

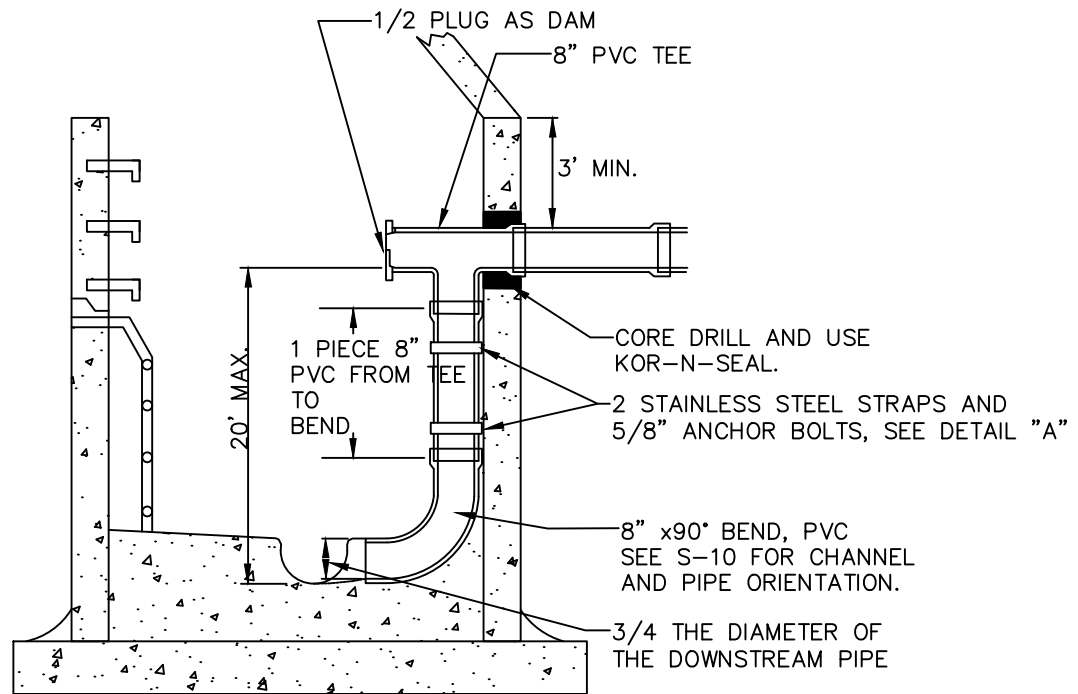
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S-10

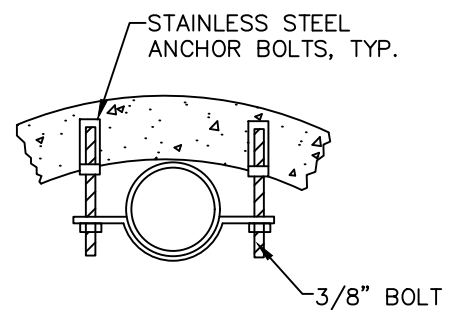
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NOTES

1. PVC PIPE IS TO BE ASTM 3034 SDR 35, WITH RUBBER GASKET JOINTS.
2. DROP TEE TO BE INSTALLED MINIMUM 3' BELOW CONE SECTION.
3. INSIDE DROP STRUCTURE SHALL BE INSTALLED ONLY WHERE APPROVED BY THE CITY ENGINEER.



DETAIL "A"



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

INSIDE DROP STRUCTURE

6-5-2009

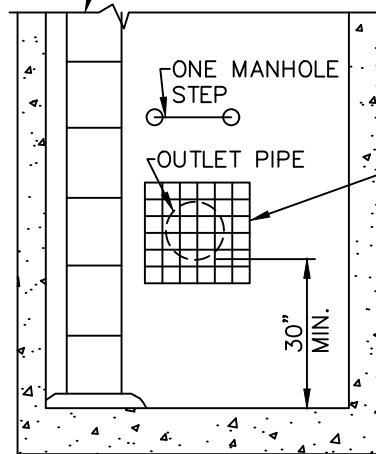
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S-11

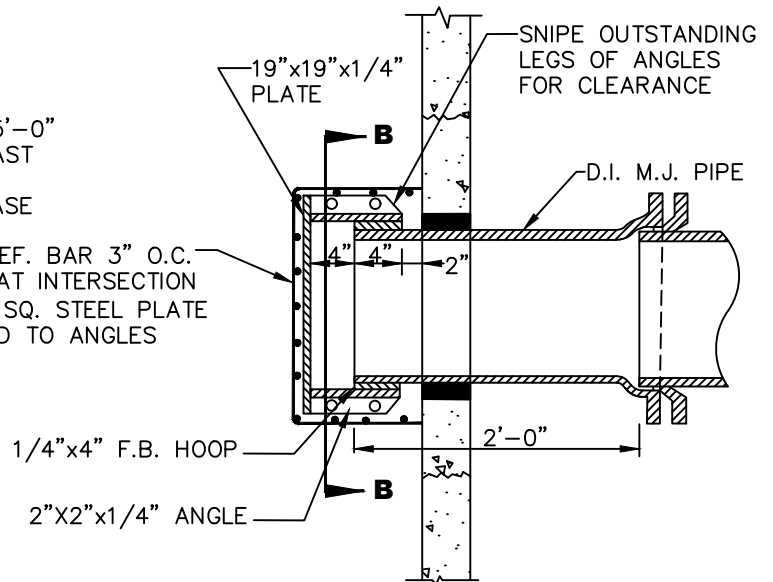
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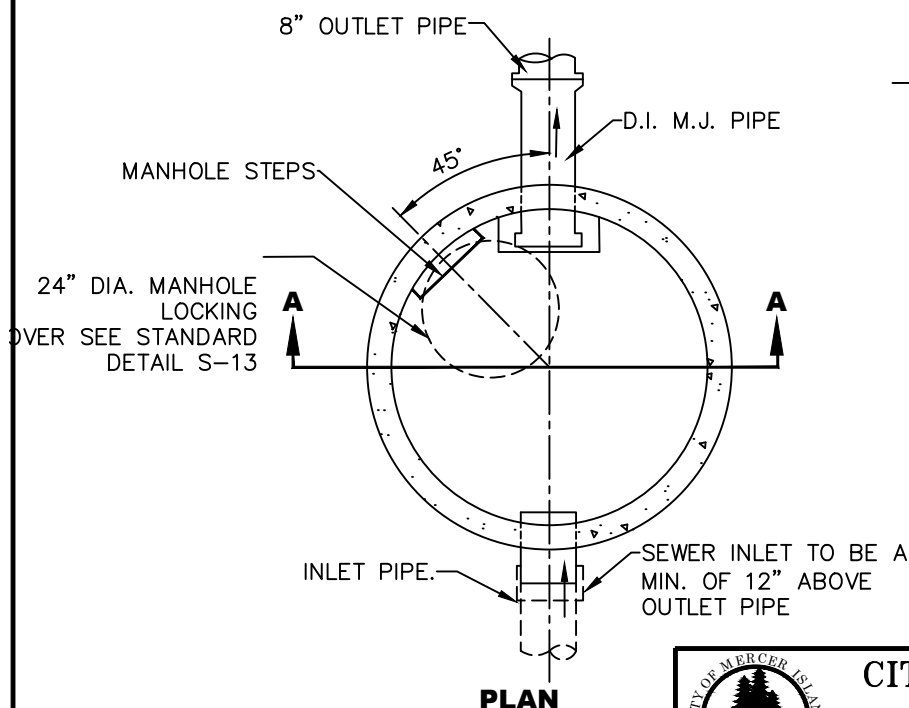
STANDARD MANHOLE LADDER
OR SAFETY RUNGS, SEE STANDARD
DETAILS S-16.



SECTION A-A



SECTION B-B



PLAN

NOTES

1. COMPLETE ASSEMBLY TO BE GALVANIZED.

| I.D. PIPE | I.D. HOOP |
|-----------|-----------|
| 8" | 9 1/16" |
| 10" | 11 1/8" |
| 12" | 13 1/4" |



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

CATCHMENT MANHOLE DETAIL

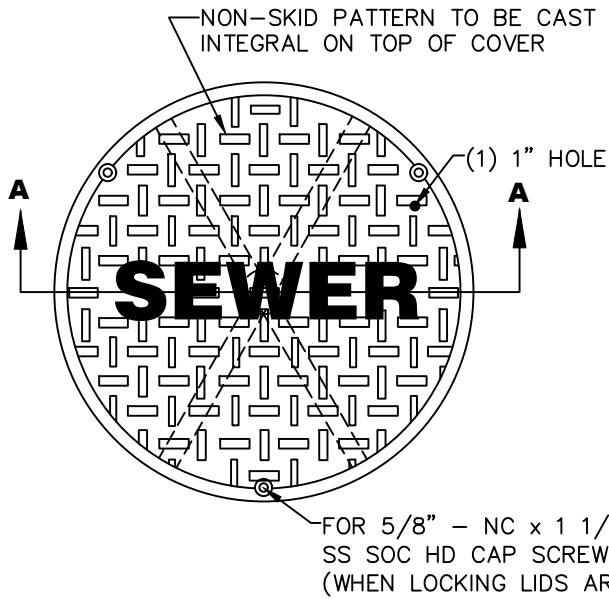
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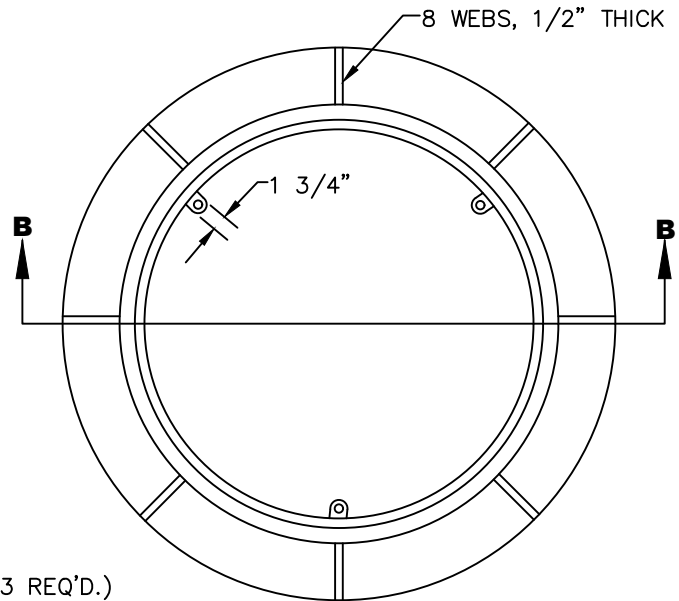
S-12

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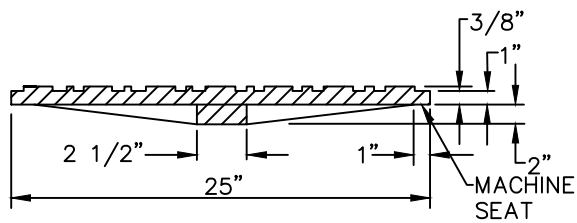
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MANHOLE COVER PLAN

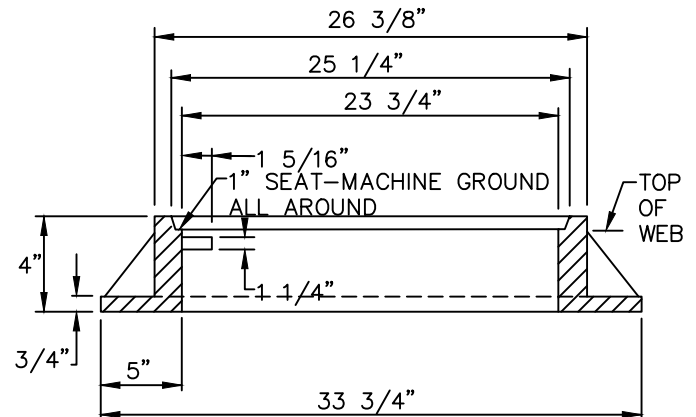


FRAME PLAN



SECTION A-A

CAST IRON—LOCKING COVER
MINIMUM WEIGHT 150 LBS.



SECTION B-B

CAST IRON FRAME
MINIMUM WEIGHT: 150 LBS

NOTES

1. COVER SHALL HAVE THE WORD "SEWER" IN 2" RAISED LETTERS.
2. MANHOLE FRAME AND COVER 24" ROUND SHALL BE OLYMPIC FOUNDRY #MH30D/T.
3. WHEN LOCKING LIDS ARE REQUIRED, PROVIDE WRENCH FOR CAP SCREW TO CITY AS REQUIRED.



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

**24" MANHOLE
FRAME WITH COVER**

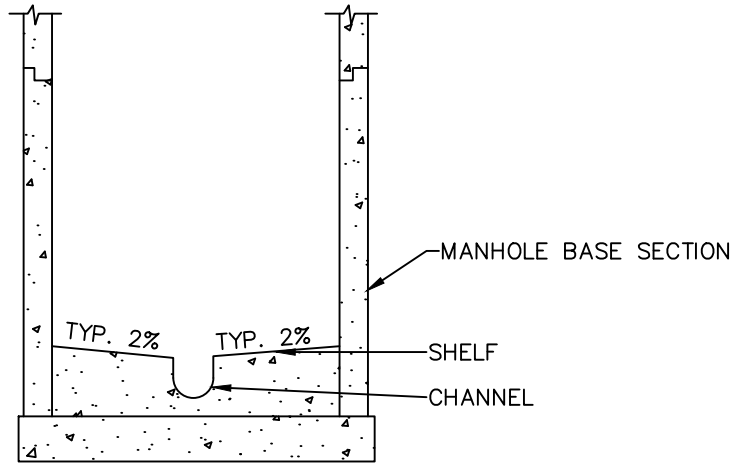
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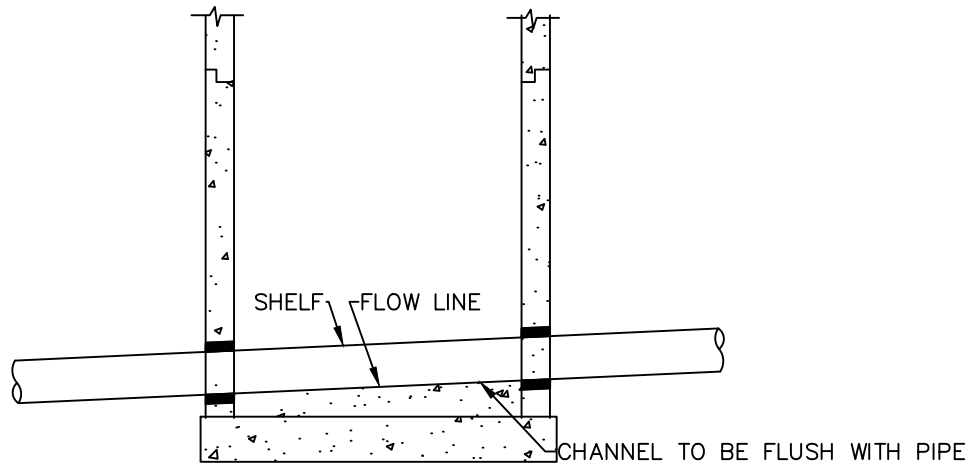
S-13

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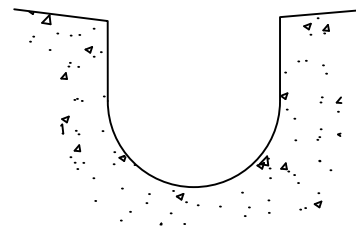
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CROSS SECTION



PROFILE



CHANNEL DETAIL

NOTES

1. MIN. 0.1' DROP ACROSS CHANNEL MAX. 1.0' DROP ACROSS CHANNEL.
2. DEPTH OF CHANNEL MUST BE SAME AS PIPE DIAMETER.



CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER

SEWER MANHOLE
MAIN CHANNEL AND SHELF

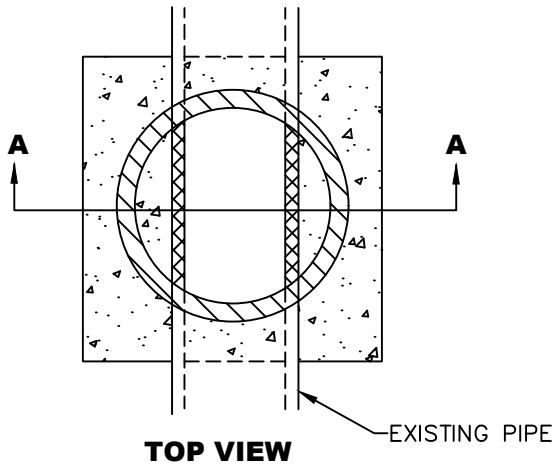
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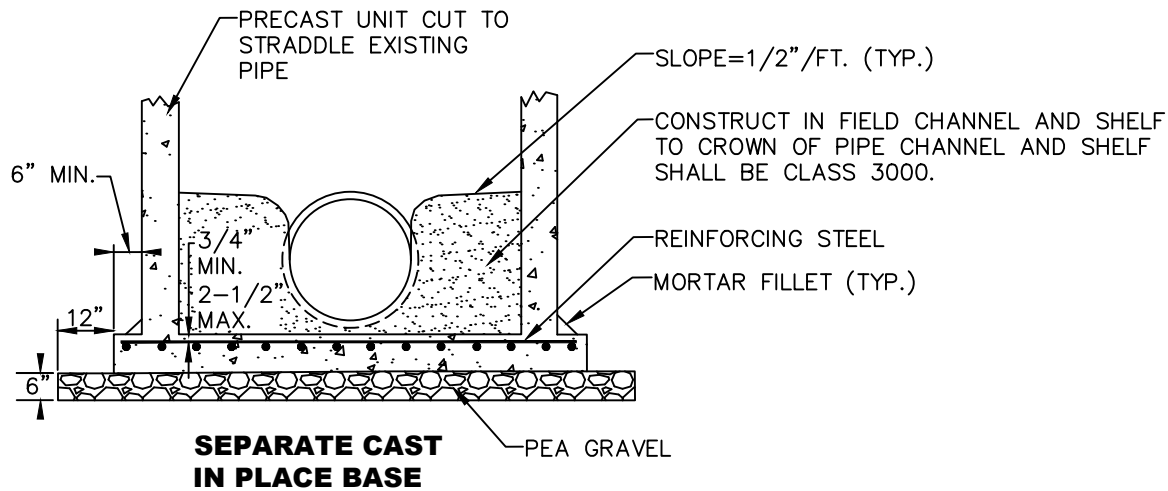
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REV DATE

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| MANHOLE DIMENSION TABLE | | | |
|-------------------------|----------------|----------------|-------------------|
| INSIDE DIAMETER | WALL THICKNESS | BASE THICKNESS | MAXIMUM HOLE SIZE |
| 48" | 4" | 6" | 36" |
| 54" | 4 1/2" | 8" | 42" |
| 60" | 5" | 8" | 48" |
| 72" | 6" | 8" | 48" |
| 84" | 8" | 12" | 48" |
| 96" | 8" | 12" | 48" |
| 108" | 10" | 12" | 48" |
| 120" | 11" | 12" | 48" |



NOTES

- EXISTING PIPE SHALL BE SUPPORTED AT ALL TIMES.
- NO WEIGHT OF THE PRECAST UNIT SHALL BEAR ON THE EXISTING PIPE.
- CONCRETE FOR CAST-IN-PLACE BASE SHALL BE CLASS 4000.
- PRECAST MANHOLE SECTION SHALL BE INSTALLED IN ACCORDANCE WITH THE STANDARD PLAN FOR THE SPECIFIED MANHOLE SIZE AND TYPE.
- MANHOLE SECTIONS SHALL NOT BE INSTALLED UNTIL CONCRETE BASE HAS SET FOR 12 HOURS.
- THE EXISTING MAIN SHALL BE LEFT IN PLACE AND THE TOP PORTION OF THE MAIN SHALL BE REMOVED. THE BOTTOM PORTION OF THE MAIN SHALL BE TIED IN AS THE CHANNEL OF THE NEW MANHOLE.
- GROUT ALL OPENINGS TO ENSURE WATER TIGHT STRUCTURE.
- A FLEXIBLE PIPE-TO-MANHOLE CONNECTOR SHALL BE EMPLOYED IN ALL CONNECTIONS OF RIGID AND FLEXIBLE PIPES TO NEW PRECAST CONCRETE MANHOLES. THE CONNECTOR SHALL BE "KOR-N-SEAL" WITH "WEDGE KORBAND" MANUFACTURED BY NPC. INC., OR APPROVED EQUAL.
- BASE REINFORCING STEEL SHALL BE PER MANUFACTURER'S RECOMMENDATION.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

NEW MANHOLE OVER AN EXISTING SEWER LINE

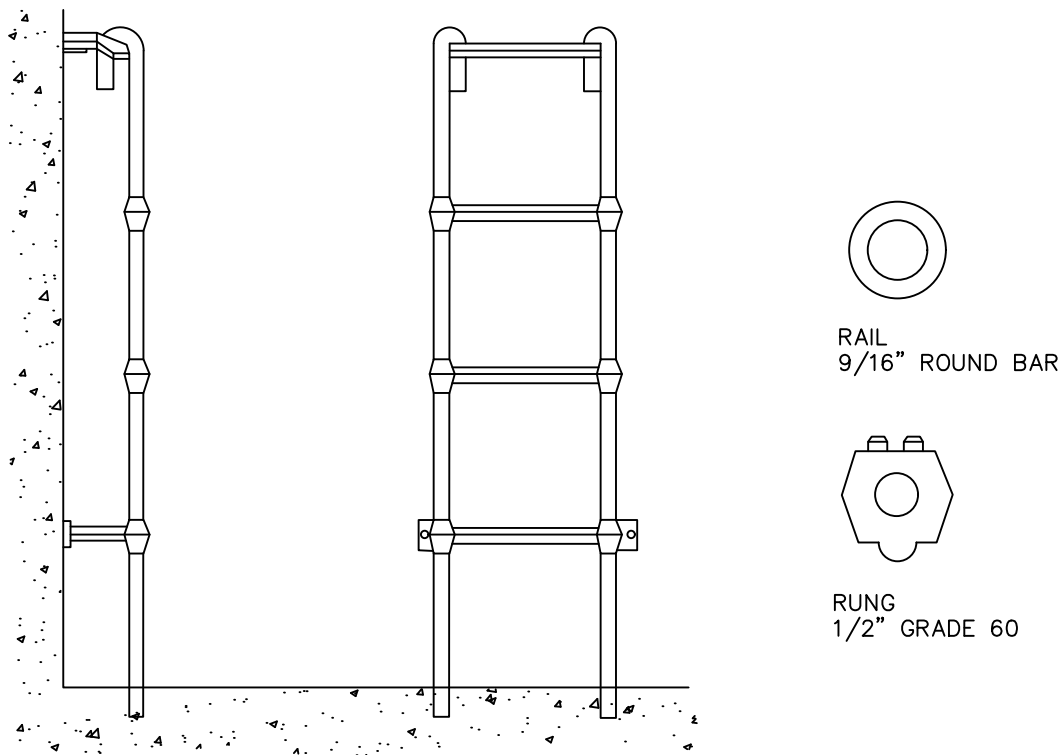
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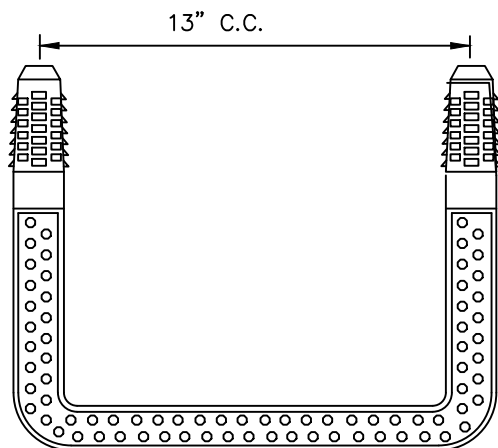
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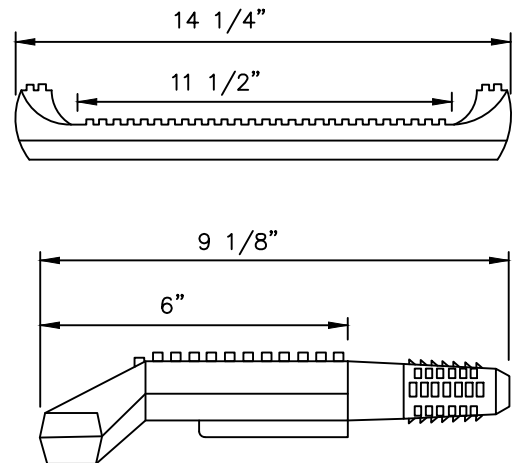
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POLYPROPYLENE HANGING LADDER



SAFETY STEPS



NOTES

- ALL STEPS SHALL MEET THE REQUIREMENTS OF ASTM C-478, AASHTO M-199, WISHA AND ALL OSHA SPECIFICATIONS. THE POLYPROPYLENE CONFORM TO ASTM D-4101. THE 1/2" GRADE 60 DEFORMED REINFORCING BAR MEETS ASTM-A-615. 9/16" COLD DRAWN BAR MEET ASTM C-1018.
- THE STEPS MAY BE INSTALLED IN THE FOLLOWING MANNER.
 - CAST IN PLACE.
 - DRIVEN INTO PREFORMED HOLES WITH CONCRETE CURED TO 3,000 P.S.I. MINIMUM.
 - DRIVEN INTO PARALLEL 1" DIAMETER HOLES DRILLED 13" ON CENTER, 3 1/2" DEEP.
 - DRILL TWO 1 1/8" OR 1 1/4" HOLES 3 1/2" DEEP. APPLY EPOXY IN THE HOLE AND AROUND THE BARDS OF THE STEP. PUSH THE STEP INTO THE HOLES ALLOWING THE EPOXY TO FLOW OUT TO THE SQUARE SHOULDER OF THE STEP. ANY OF THE ABOVE METHODS SHALL RESIST A PULLOUT FORCE OF OVER 1,000 LBS.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

POLYPROPYLENE LADDER AND MANHOLE STEPS

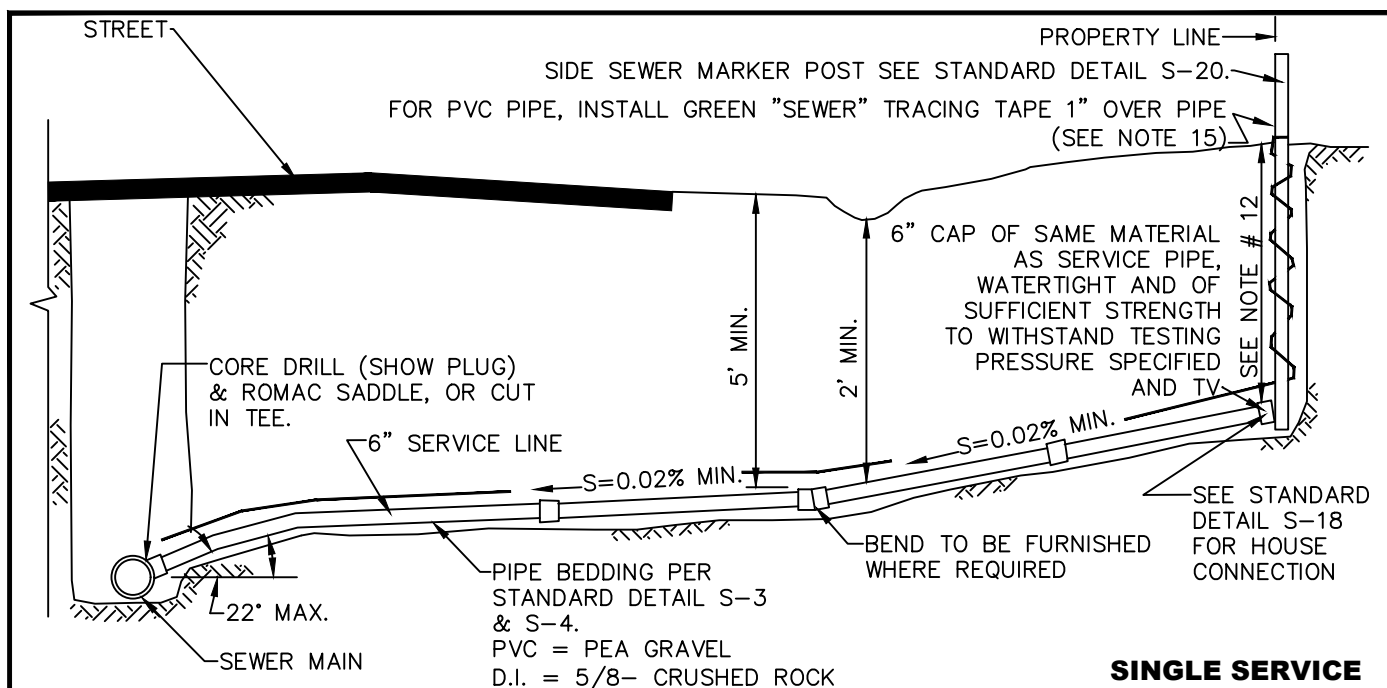
6-5-2009

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S-16

REV DATE

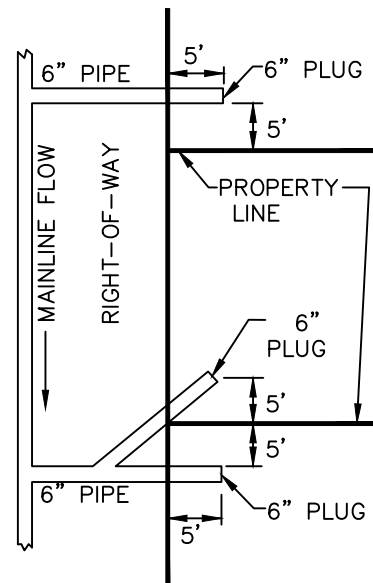
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NOTES

- ELBOWS SHALL NOT BE GREATER THAN 45 DEGREES.
- CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED ELBOW/100'.
- RIGHT-OF-WAY RESTORATION SHALL MATCH OR EXCEED THE ORIGINAL CONDITION AND BE IN ACCORDANCE WITH CITY STANDARDS.
- ALL TRENCH BACKFILL IN PUBLIC RIGHT-OF-WAY OR ROADWAY AREAS SHALL BE CRUSHED SURFACING PER WSDOT 9-09.9(3) OR BANK RUN GRAVEL PER WSDOT 9-03.19, COMPACTED IN 6" LIFTS OR MAY BE CDF WHEN DIRECTED BY THE CITY ENGINEER (SEE DETAIL S-3).
- LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH 1/8 BEND OR WYE. 90° CHANGE WITH 1/8 BEND AND WYE.
- 6" SEWER PIPE MINIMUM SIZE IN RIGHT-OF-WAY, AND ELSEWHERE AS DIRECTED BY ENGINEER. 2% MIN. GRADE (UNLESS DIRECTED BY ENGINEER), 50% MAXIMUM.
- ALL A.C. MAINS TO BE TAPPED IN ACCORDANCE WITH WAC 296-62-00775 STATE/FEDERAL GUIDELINES AND CERTIFICATION.
- CONSTRUCTION IN RIGHT-OF-WAY MUST BE DONE BY A REGISTERED AND LICENSED CONTRACTOR.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT CITY SEWER ORDINANCES.
- WHERE CITY ENGINEER ALLOWS SIDE SEWER CONNECTIONS TO MANHOLE, INVERT OF SIDE SEWER SHALL BE EQUAL TO OR ABOVE MAIN SEWER CROWN, BUT NOT TO EXCEED 18" ABOVE INVERT OF MAIN SEWER.
- UNLESS OTHERWISE INDICATED ON PLAN, SIDE SEWER SHALL BE MIN. OF 6' DEEP AT PROPERTY LINE, OR 5' LOWER THAN THE LOWEST ELEVATION, WHICH EVER IS LOWER.
- ALL PIPE MATERIALS NOT TO STANDARDS WILL BE ABANDONED AND REPLACED WITH DUCTILE IRON OR PVC PIPE OF THE SAME SIZE.
- IF A BUILDING SEWER IS TO SERVE MORE THAN ONE PROPERTY, BY JOINT AGREEMENT OF THE OWNERS, AN APPROVED EASEMENT INSURING THAT ALL PROPERTIES INVOLVED SHALL HAVE PERPETUAL USE OF THE SIDE SEWER, HAVING PROVISIONS FOR OPERATION, MAINTENANCE, RECONSTRUCTION AND FOR ACCESS FOR REPAIR PURPOSES, SHALL BE SIGNED BY THE OWNERS. THIS EASEMENT SHALL BE RECORDED WITH THE COUNTY AUDITOR. A SIX INCH (MINIMUM) DIAMETER PIPE SHALL BE USED FOR THE COMMON LINE AND A SIX INCH CLEANOUT EXTENDING TO WITHIN 12 INCHES OF THE GROUND SURFACE SHALL BE PROVIDED AT THE WYE WHERE THE UPPER GRADE CONNECTIONS ARE MADE. BACKWATER VALVES SHALL BE INSTALLED ON SERVICE LINES UPSTREAM OF THE CONNECTION TO THE SHARED SIDE SEWER.
- THE CITY ENGINEER MAY REQUIRE BACKWATER VALVES ON SIDE SEWERS WHEN DEEMED NECESSARY. THE EFFECTIVE OPERATION AND MAINTENANCE OF ANY BACKWATER VALVE SHALL BE THE RESPONSIBILITY OF THE OWNER OF THE SIDE SEWER.
- UTILITY PIPE TRACER TAPE SHALL BE DETECTABLE BELOW GROUND SURFACE, COLOR CODED, WITH UTILITY NAME PRINTED ON TAPE. CONDUCTIVE WARNING TAPE REQUIRED OVER ALL WATER PIPE. TAPE SHALL BE MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED PLASTIC TAPE, ALUMINUM BACKED, INTENDED FOR DIRECT-BURIAL SERVICE. TAPE SHALL BE NOT LESS THAN 6" WIDE X 4 MILS THICK.

SINGLE SERVICE



DOUBLE SERVICE



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

SIDE SEWER CONNECTION AND STUB

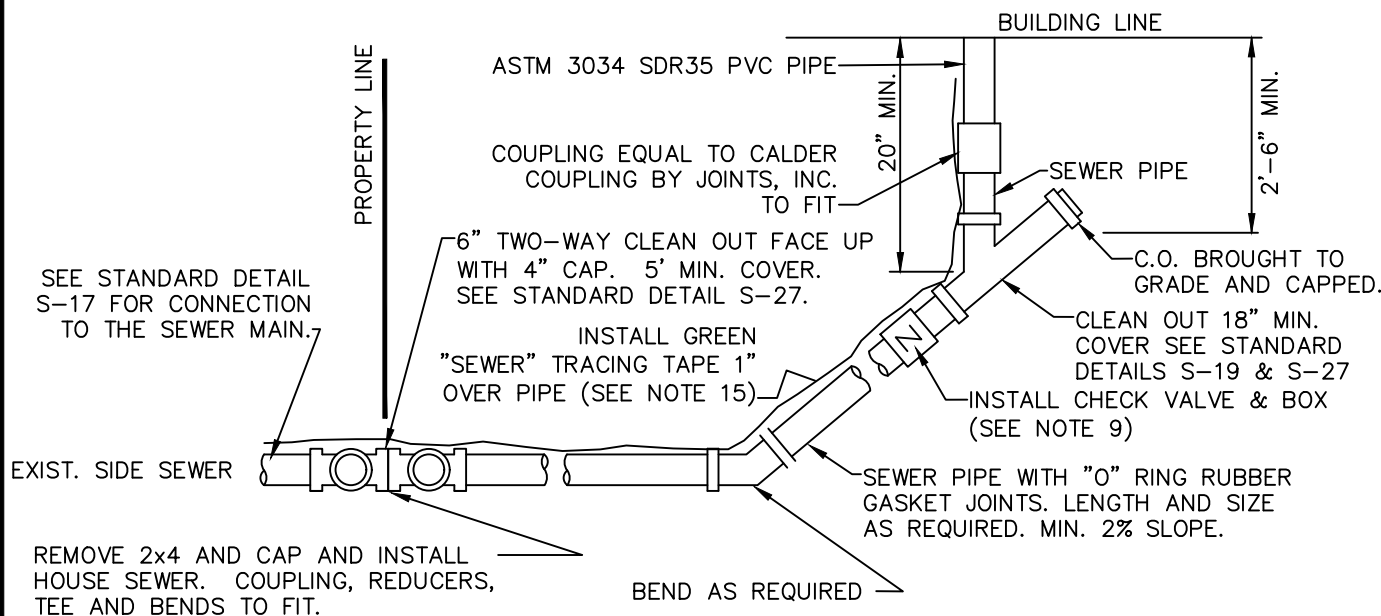
6-5-2009

NO SCALE

S-17

REV DATE

APPROVED



BUILDING CONNECTION

NOTES

1. ELBOWS SHALL NOT BE GREATER THAN 45 DEGREES.
2. CLEAN OUT IS REQUIRED FOR EACH PIPE LENGTH GREATER THAN 100' AND FOR EACH 90° ACCUMULATED ELBOW/100°.
3. ALL HOUSE PLUMBING OUTLETS MUST BE CONNECTED TO THE SEWER. NO DOWN SPOUTS OR STORM DRAINAGE MAY BE CONNECTED TO THE SEWER SYSTEM.
4. 18" MINIMUM COVERAGE OVER PIPE.
5. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH $\frac{1}{8}$ BEND OR WYE. 90° CHANGE WITH $\frac{1}{8}$ BEND AND WYE.
6. 4" SEWER PIPE MINIMUM SIZE ON PROPERTY. 2% MINIMUM GRADE.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT SEWER ORDINANCES.
8. ALL CONSTRUCTION REQUIRES A PLAN SHOWING PROPERTY AND DIMENSIONS AND COMPLETION OF SIDE SEWER APPLICATION AND MAINTENANCE AGREEMENT, AS NEEDED.
9. BACK WATER VALVE (CHECK VALVE) IS REQUIRED:
 - A. IF CONNECTED TO A SHARED SIDE SEWER.
 - B. IF CONNECTION AT HOUSE IS LOWER THAN BOTH UPSTREAM AND DOWNSTREAM MANHOLE.
 - C. SEE S-23 & S-24 FOR LAKE LINE REQUIREMENTS.
10. AS-BUILT DRAWING SHOWING LOCATION OF SIDE SEWER & ALL BENDS, C.O. ETC., IN RELATION TO THE HOUSE IS REQUIRED AFTER INSPECTION & INSTALLATION. SEE STANDARD DETAIL S-38 FOR A TYPICAL "AS BUILT".
11. THE MINIMUM PIPE SIZE FOR SIDE SEWERS SHALL BE:
 - 6" - WITHIN THE PUBLIC RIGHT-OF-WAY.
 - 4" - SINGLE FAMILY RESIDENCES.
 - 6" - 2 TO 6 SINGLE FAMILY RESIDENCES.
 - 6" - BUILDINGS OTHER THAN SINGLE FAMILY RESIDENCES.
12. UTILITY PIPE TRACER TAPE SHALL BE DETECTABLE BELOW GROUND SURFACE, COLOR CODED, WITH UTILITY NAME PRINTED ON TAPE. CONDUCTIVE WARNING TAPE REQUIRED OVER ALL WATER PIPE. TAPE SHALL BE MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED PLASTIC TAPE, ALUMINUM BACKED, INTENDED FOR DIRECT-BURIAL SERVICE. TAPE SHALL BE NOT LESS THAN 6" WIDE X 4 MILS THICK.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

HOUSE SEWER CONNECTION

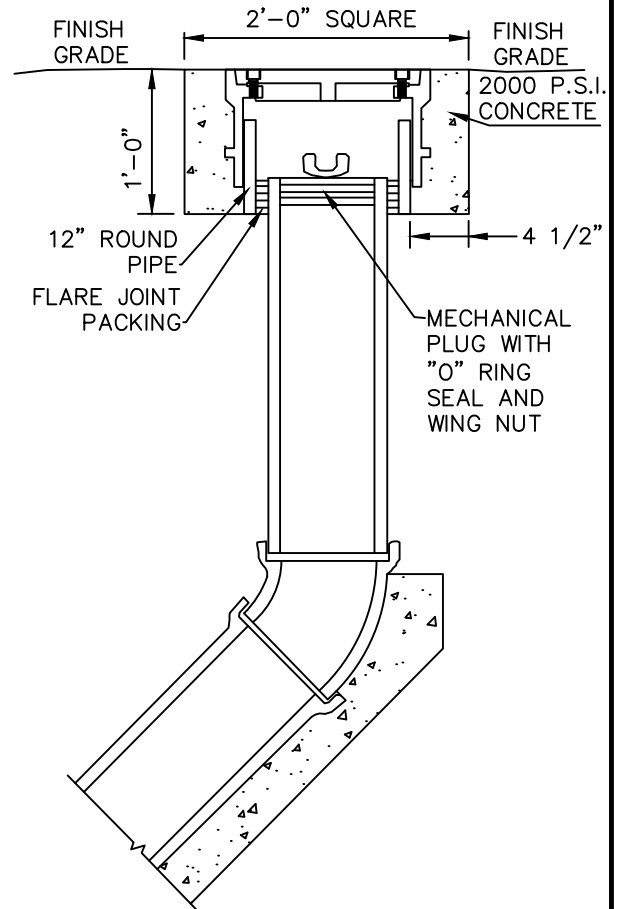
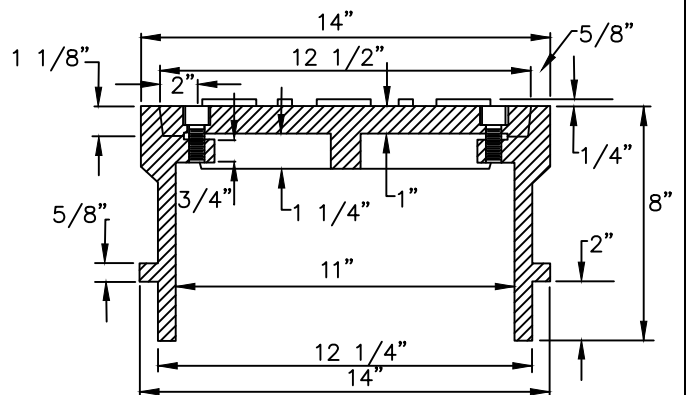
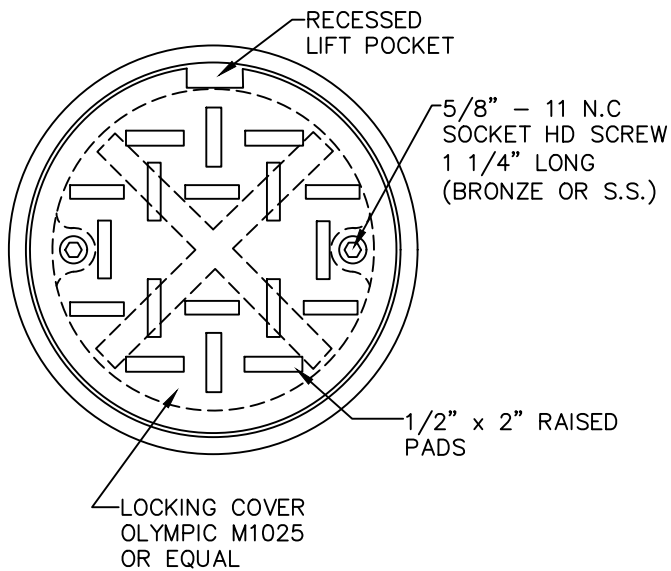
6-5-2009

NO SCALE

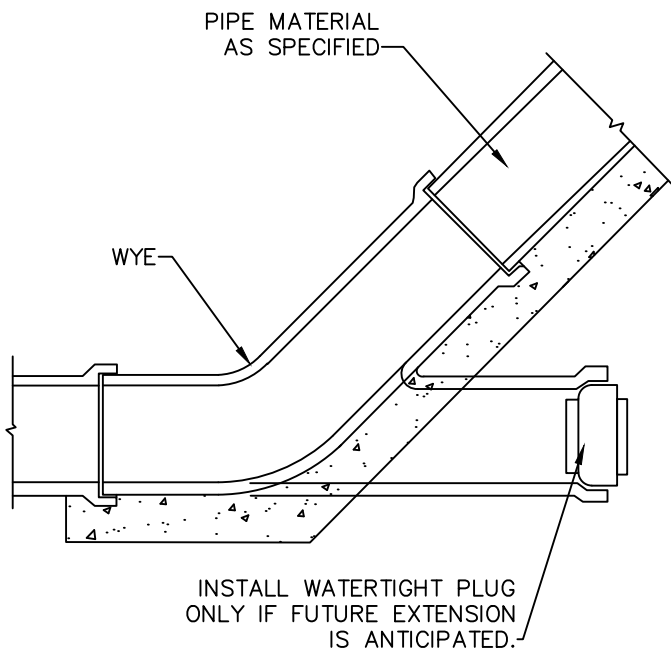
S-18

REV DATE

APPROVED



FOR PVC PIPE



NOTES

1. SEE S-27 FOR INSTALLATION DETAILS.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

CLEAN OUT DETAIL

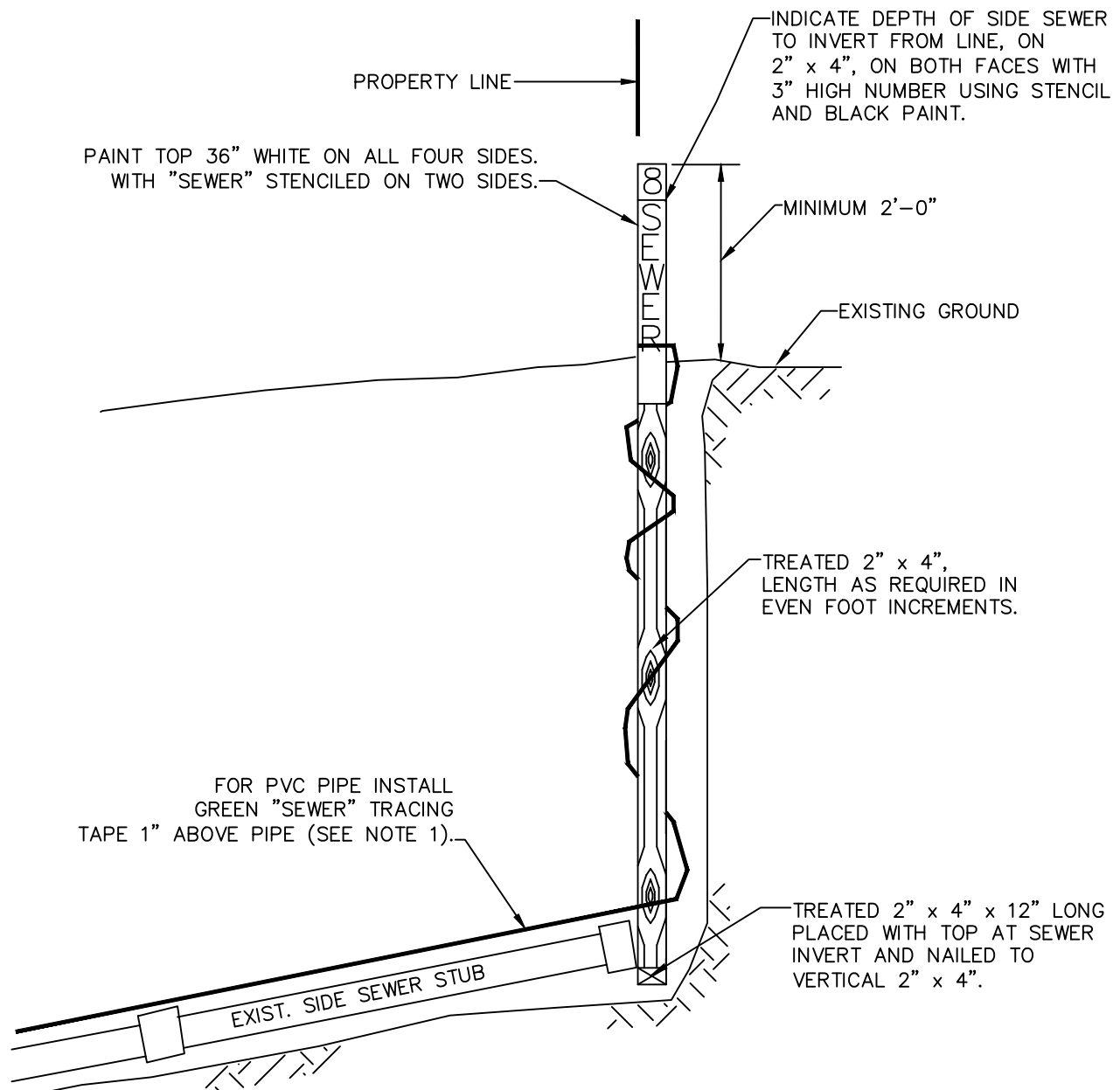
6-5-2009

NO SCALE

S-19

REV DATE

APPROVED



NOTES

1. UTILITY PIPE TRACER TAPE SHALL BE DETECTABLE BELOW GROUND SURFACE, COLOR CODED, WITH UTILITY NAME PRINTED ON TAPE. CONDUCTIVE WARNING TAPE REQUIRED OVER ALL WATER PIPE. TAPE SHALL BE MANUFACTURER'S STANDARD PERMANENT, BRIGHT-COLORED, CONTINUOUS PRINTED PLASTIC TAPE, ALUMINUM BACKED, INTENDED FOR DIRECT-BURIAL SERVICE. TAPE SHALL BE NOT LESS THAN 6" WIDE X 4 MILS THICK.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

SIDE SEWER MARKER POST

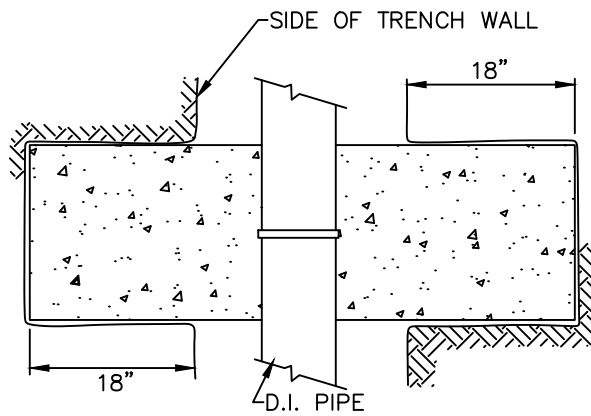
6-5-2009

NO SCALE

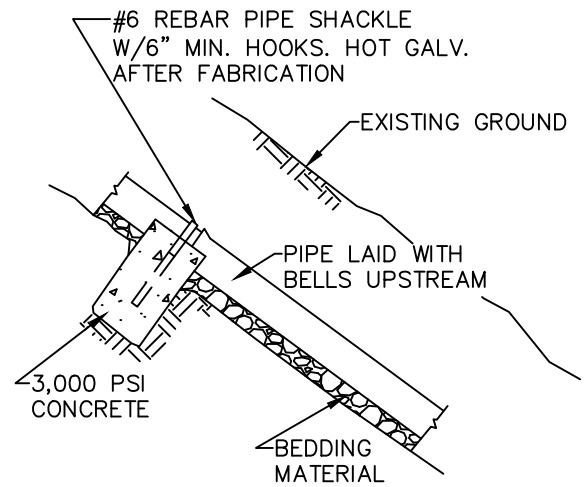
S-20

REV DATE

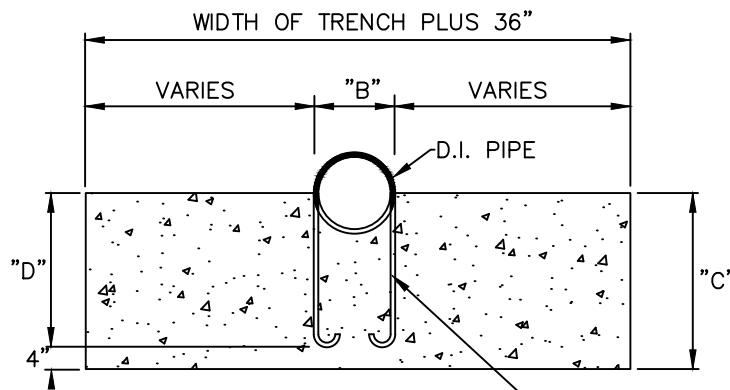
APPROVED



PLAN

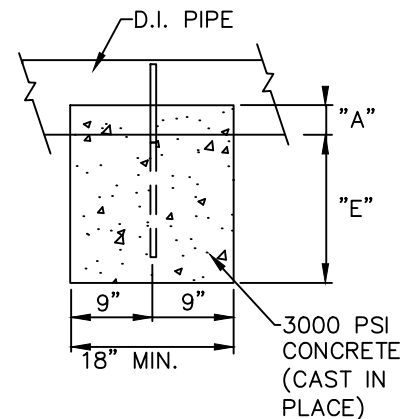


PROFILE



NO. 6 REBAR (COAT EXPOSED PORTION WITH ROYSTON ROSKOTE (SEE W-5 FOR DETAILS).

ELEVATION



SECTION

NOTES

1. PIPE ANCHORS TO BE USED ONLY AS APPROVED BY THE ENGINEER.
2. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 P.S.I.
3. TIE ROD ASSEMBLIES SHALL BE COATED WITH ROYSTON ROSKOTE #612SM OR APPROVED EQUAL.

| PIPE SIZE | DIMENSIONS INCHES | | | | |
|-----------|-------------------|------|----|----|------|
| | A | B | C | D | E |
| 4" | 2.4 | 4.8 | 17 | 13 | 14.6 |
| 6" | 3.5 | 6.9 | 18 | 14 | 14.5 |
| 8" | 4.5 | 9.1 | 19 | 15 | 14.5 |
| 10" | 5.6 | 11.1 | 20 | 16 | 14.4 |
| 12" | 6.6 | 13.2 | 21 | 17 | 14.4 |
| 14" | 7.7 | 15.3 | 22 | 18 | 14.3 |
| 16" | 8.7 | 17.4 | 23 | 19 | 14.3 |
| 18" | 9.8 | 19.5 | 24 | 20 | 14.2 |



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

PIPE ANCHOR DETAIL

6-5-2009

NO SCALE

S-21

REV DATE

APPROVED

DISCONNECTION

WHEN DEMOLISHING AN EXISTING BUILDING, THE BUILDING SIDE SEWER SHALL BE DISCONNECTED PRIOR TO REMOVAL OF BUILDING FOUNDATIONS. THE CONTRACTOR SHALL INSTALL A MECHANICAL PLUG WITH NON-SHRINK GROUT AT THE END OF THE SIDE SEWER TO REMAIN IN PLACE. DISCONNECTION'S SHALL BE PERFORMED IN THE PRESENCE OF THE CITY'S UTILITY INSPECTOR. THE CONTRACTOR SHALL PROVIDE AN AS-BUILT DRAWING DEPICTING THE DISCONNECTED SIDE SEWER UPON COMPLETION OF THE WORK.

RECONNECTION

WHEN RECONNECTING TO AN EXISTING SIDE SEWER, THE POINT OF RECONNECTION WILL BE DETERMINED BASED ON THE MAGNITUDE OF THE CONSTRUCTION ON THE PROPERTY.

1. PARTIAL INTERIOR REMODEL AND/OR BUILDING ADDITION – NO SIDE SEWER REPLACEMENT REQUIRED UNLESS A KNOWN PROBLEM EXISTS IN THE SIDE SEWER.
2. COMPLETE INTERIOR REMODEL OF RESIDENCE – ASSESS CONDITION OF EXISTING SIDE SEWER THROUGH VIDEO INSPECTION FROM BUILDING TO PROPERTY LINE AND REPLACE AS NEEDED. IF EXISTING SIDE SEWER IS ASBESTOS CEMENT OR CONCRETE, SIDE SEWER SHALL BE REPLACED FROM BUILDING TO PROPERTY LINE, UNLESS THE APPLICANT PROVES, TO THE SATISFACTION OF THE CITY ENGINEER, THAT THE SIDE SEWER IS WATER TIGHT AND IN SOUND CONDITION.*
3. COMPLETE INTERIOR REMODEL AND BUILDING ADDITION – NEW SIDE SEWER FROM BUILDING TO PROPERTY LINE.*
4. CONSTRUCTION OF A NEW SINGLE FAMILY RESIDENCE – NEW SIDE SEWER FROM BUILDING TO PROPERTY LINE.*
5. BACK WATER VALVE INSTALLATION PER CITY ENGINEER, IF SCENARIO 2, 3 OR 4 IS DIRECTLY ATTACHED TO THE LAKE LINE.

VIDEO INSPECTION OF THE EXISTING SIDE SEWER, BETWEEN THE PROPERTY LINE AND THE SEWER MAIN SHALL BE PERFORMED FOR SCENARIOS NUMBER 3 AND 4.

PROVIDE A COPY OF THE VIDEO DOCUMENTATION TO THE CITY ENGINEER.

REPLACEMENT OR REPAIR OF THAT PORTION OF THE SIDE SEWER BETWEEN THE PROPERTY LINE AND THE SEWER MAIN, WILL BE DETERMINED BY THE CITY ENGINEER, BASED ON THE VIDEO INSPECTION.

*IF THE EXISTING SIDE SEWER IS PVC AND IS LESS THAN TEN YEARS OLD, THE SIDE SEWER DOES NOT HAVE TO BE REPLACED IF A VIDEO INSPECTION AND HYDROSTATIC PRESSURE TEST CONFIRMS THAT THE SIDE SEWER IS IN PROPER WORKING CONDITION. THESE TESTS SHALL BE PERFORMED AFTER ALL HEAVY EQUIPMENT THAT COULD DAMAGE THE SIDE SEWER IS OFF OF THE SITE.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

RESIDENTIAL SIDE SEWER DISCONNECTION & RECONNECTION

6-5-2009

NO SCALE

S-22

| | | | | | | |
|----------|--|--|--|--|--|----------|
| REV DATE | | | | | | APPROVED |
|----------|--|--|--|--|--|----------|

DISCONNECTION

WHEN ABANDONING A SIDE SEWER IT SHALL BE DISCONNECTED AT THE MAIN PRIOR TO REMOVAL OF BUILDING FOUNDATIONS. THE CONTRACTOR SHALL PLUG THE CONNECTION AT THE MAIN WITH A MECHANICAL PLUG AND NON-SHRINK GROUT. DISCONNECTION'S SHALL BE PERFORMED IN THE PRESENCE OF THE CITY'S UTILITY INSPECTOR. THE CONTRACTOR SHALL PROVIDE AN AS-BUILT DRAWING DEPICTING THE DISCONNECTED SIDE SEWER UPON COMPLETION OF THE WORK.

RECONNECTION

WHEN RECONNECTING TO AN EXISTING SIDE SEWER, THE POINT OF RECONNECTION WILL BE DETERMINED BASED ON THE MAGNITUDE OF THE CONSTRUCTION ON THE PROPERTY.

1. PARTIAL INTERIOR REMODEL AND/OR BUILDING ADDITION – NO SIDE SEWER REPLACEMENT REQUIRED UNLESS A KNOWN PROBLEM EXISTS IN THE SIDE SEWER.
2. COMPLETE INTERIOR REMODEL – ASSESS CONDITION OF EXISTING SIDE SEWER THROUGH VIDEO INSPECTION FROM BUILDING TO SEWER MAIN AND REPLACE AS NEEDED. IF EXISTING SIDE SEWER IS ASBESTOS CEMENT OR CONCRETE, SIDE SEWER SHALL BE REPLACED FROM BUILDING TO PROPERTY LINE.*
3. COMPLETE INTERIOR REMODEL AND BUILDING ADDITION – NEW SIDE SEWER FROM BUILDING AT LEAST TO PROPERTY LINE.*
4. CONSTRUCTION OF A NEW BUILDING – NEW SIDE SEWER FROM BUILDING AT LEAST TO MAIN.*

VIDEO INSPECTION OF THE EXISTING SIDE SEWER, BETWEEN THE PROPERTY LINE AND THE SEWER MAIN SHALL BE PERFORMED FOR SCENARIO NUMBER 3.

PROVIDE A COPY OF THE VIDEO DOCUMENTATION TO THE CITY ENGINEER.

REPLACEMENT OR REPAIR OF THAT PORTION OF THE SIDE SEWER BETWEEN THE PROPERTY LINE AND THE SEWER MAIN, WILL BE DETERMINED BY THE CITY ENGINEER, BASED ON THE VIDEO INSPECTION.

*IF THE EXISTING SIDE SEWER IS PVC AND IS LESS THAN TEN YEARS OLD, THE SIDE SEWER DOES NOT HAVE TO BE REPLACED IF A VIDEO INSPECTION AND HYDROSTATIC PRESSURE TEST CONFIRMS THAT THE SIDE SEWER IS IN PROPER WORKING CONDITION. THESE TESTS SHALL BE PERFORMED AFTER ALL HEAVY EQUIPMENT THAT COULD DAMAGE THE SIDE SEWER IS OFF OF THE SITE.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

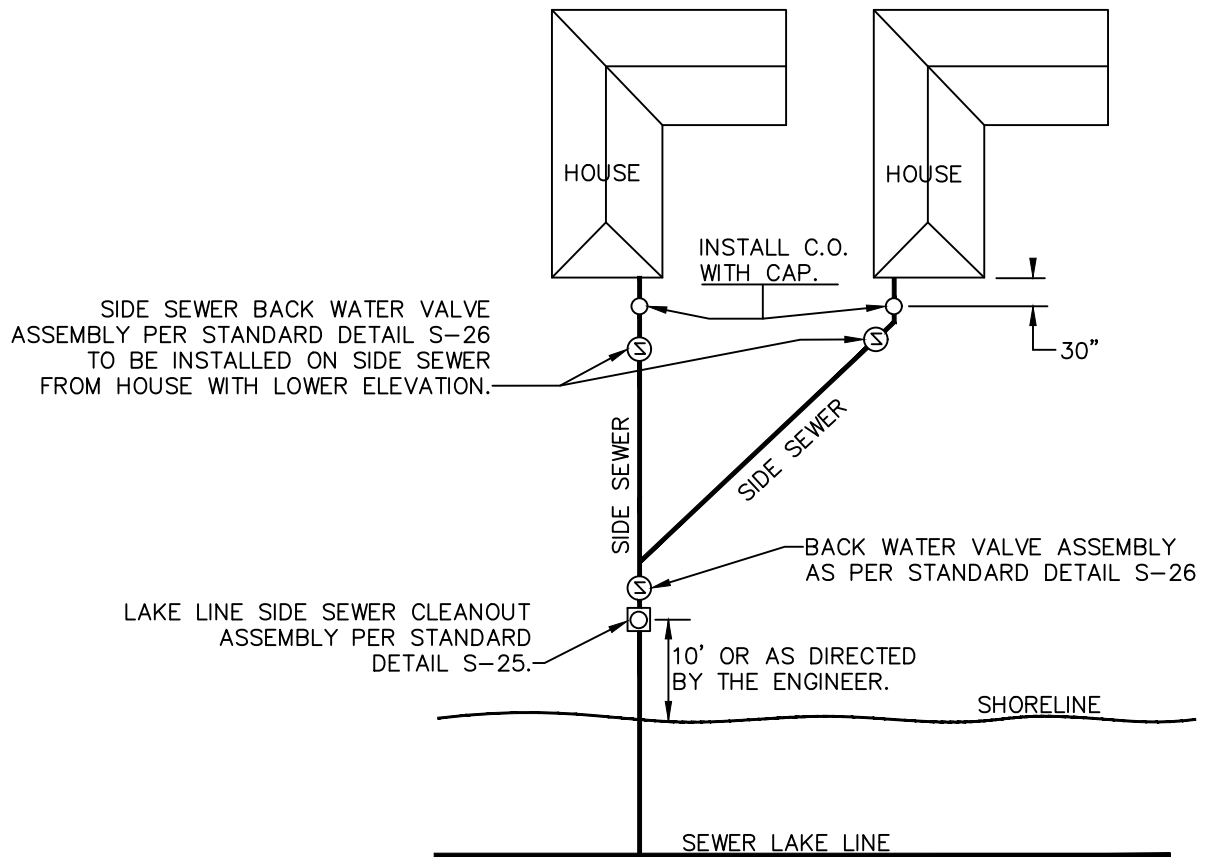
COMMERCIAL/MULTI FAMILY SIDE SEWER DISCONNECTION & RECONNECTION

6-5-2009

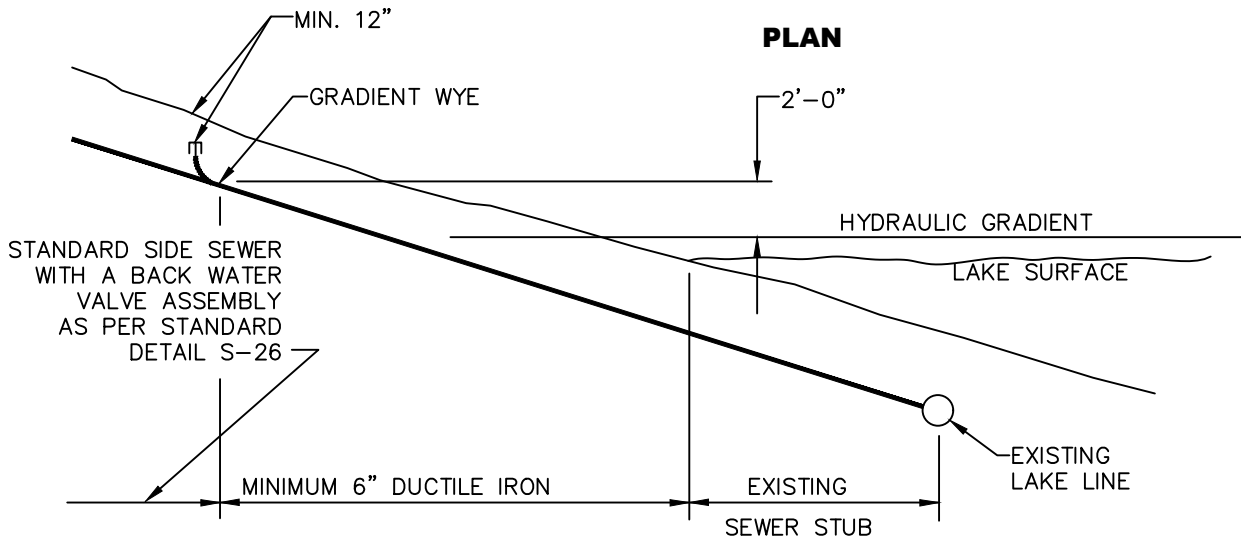
NO SCALE

S-22A

| | | | | | | |
|----------|--|--|--|--|--|----------|
| REV DATE | | | | | | APPROVED |
|----------|--|--|--|--|--|----------|



PLAN



ELEVATION

NOTES

1. BACK WATER VALVE ASSEMBLY IS PRIVATE AND SHALL BE THE PROPERTY OWNERS RESPONSIBILITY FOR MAINTENANCE.
2. PIPE AND MATERIAL SHALL BE DUCTILE IRON TO HYDRAULIC GRADIENT LINE.
3. INSTALL GRADIENT WYE AT HYDRAULIC GRADIENT PLUS 2.0' VERTICAL. CAST IRON WYE WITH MJ PLUG AND 12" OF COVER.
4. INSTALL BACK WATER VALVE BETWEEN WYE AND FIRST SERVICE CONNECTION.



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

**LAKE LINE CLEANOUT &
BACK WATER VALVE ASSEMBLY
INSTALLATION ABOVE
HYDRAULIC GRADIENT**

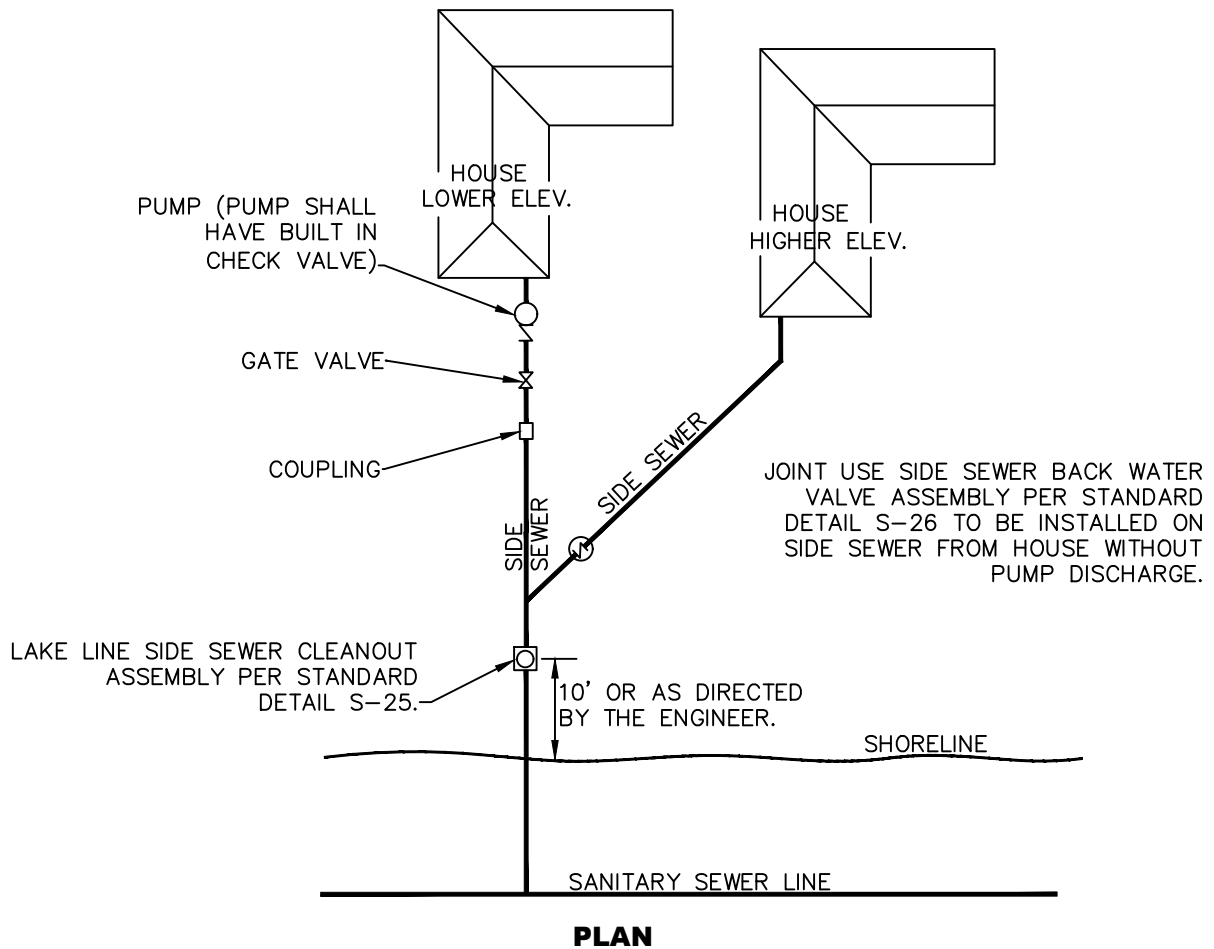
6-5-2009

NO SCALE

S-23

REV DATE

APPROVED



NOTES

1. BACK WATER VALVE ASSEMBLY IS PRIVATE AND SHALL BE THE PROPERTY OWNERS RESPONSIBILITY FOR MAINTENANCE.
2. TO BE USED ONLY WITH PRIOR APPROVAL OF THE CITY ENGINEER.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

LAKE LINE CLEANOUT & BACK WATER VALVE ASSEMBLY INSTALLATION BELOW HYDRAULIC GRADIENT

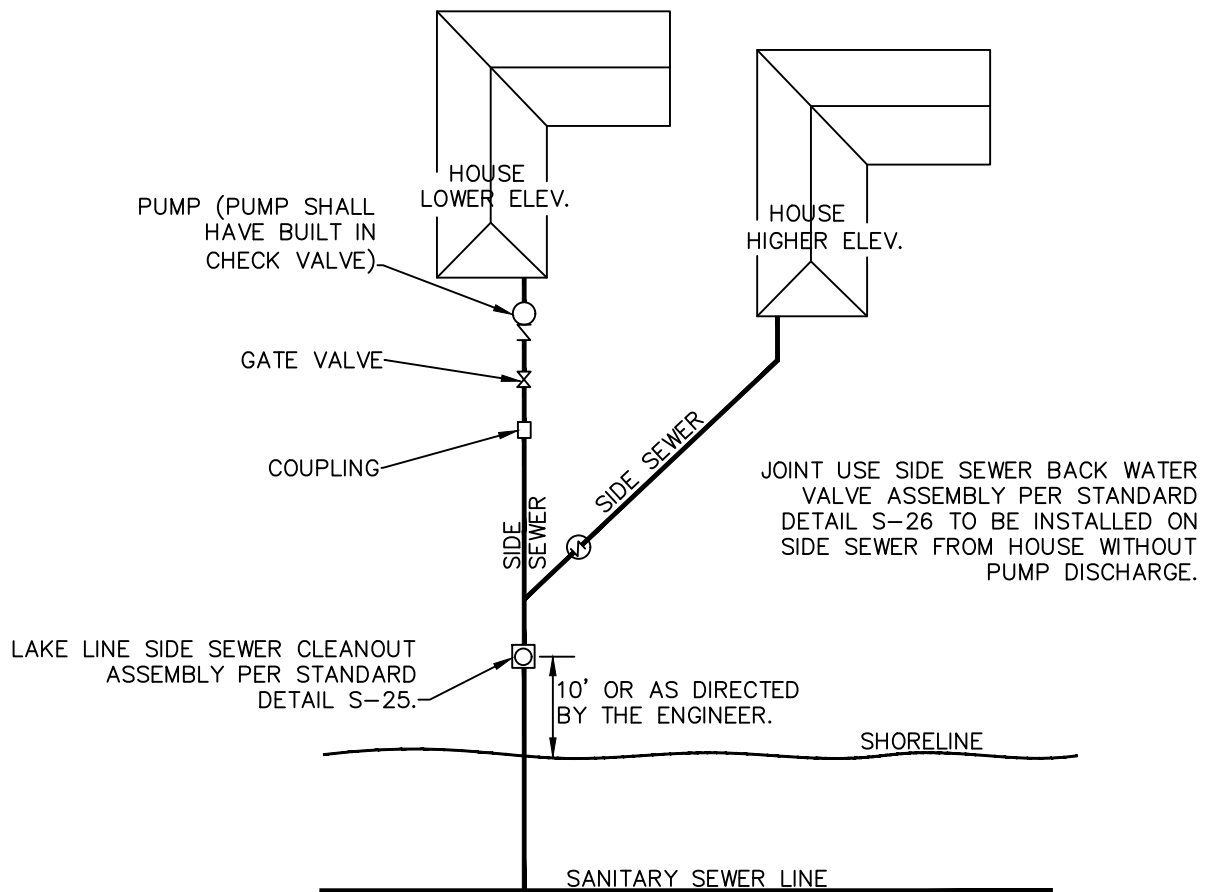
6-5-2009

NO SCALE

S-24

REV DATE

APPROVED



PLAN

NOTES

1. BACK WATER VALVE ASSEMBLY IS PRIVATE AND SHALL BE THE PROPERTY OWNERS RESPONSIBILITY FOR MAINTENANCE.
2. TO BE USED ONLY WITH PRIOR APPROVAL OF THE CITY ENGINEER.



**CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER**

**LAKE LINE CLEANOUT & BACK
WATER VALVE ASSEMBLY
INSTALLATION BELOW
HYDRAULIC GRADIENT**

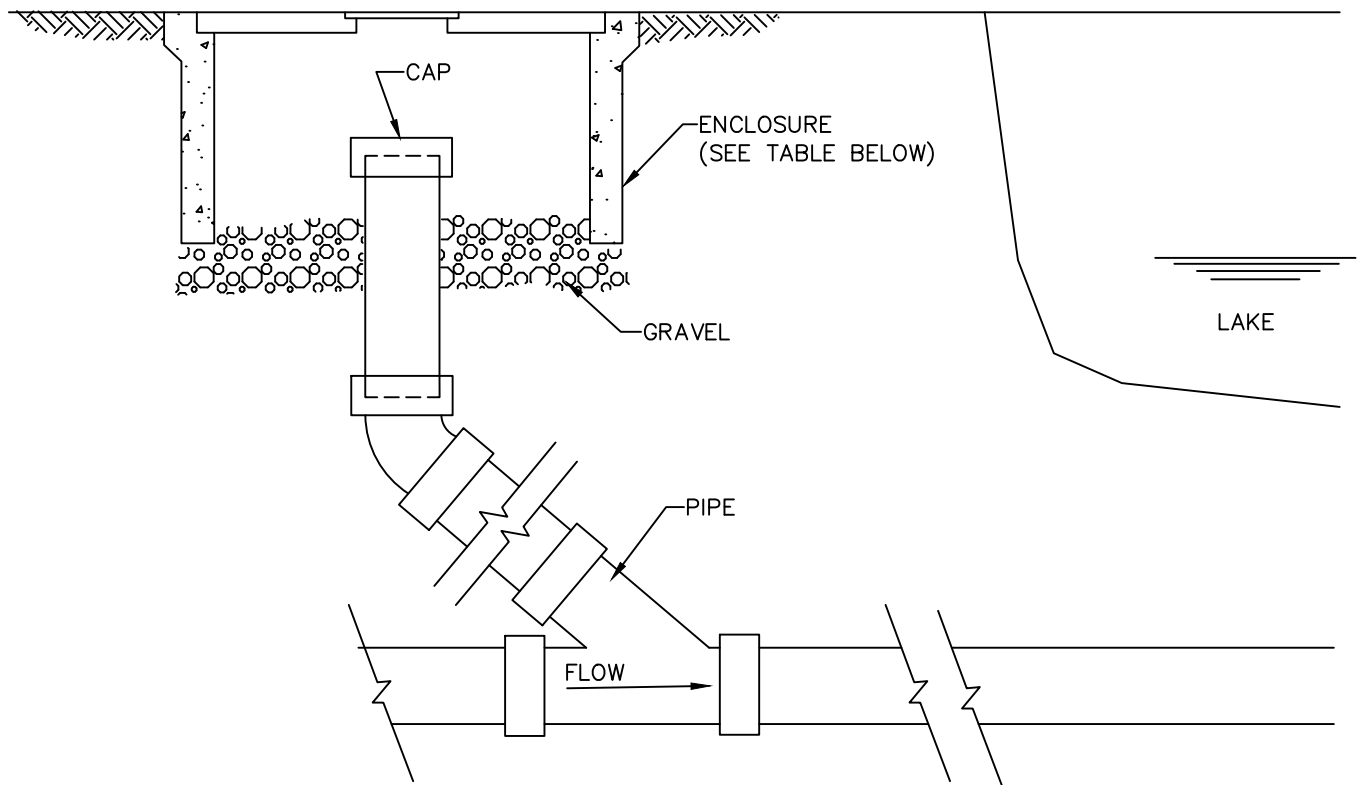
6-5-2009

NO SCALE

S-24

REV DATE

APPROVED



LAKE LINE CLEANOUT

| PIPE SIZE | MATERIAL | CAP | ENCLOSURE | COMMENTS |
|-----------|----------|----------------------------|--|---------------------------------------|
| 6" | PVC | SIDU MECHANICAL SEWER PLUG | CONC. METER BOX, FOGTITE 1-D | INSTALLATION BELOW HYDRAULIC GRADIENT |
| 6" | PVC | PVC CAP W/O GASKET | CONC. METER BOX, FOGTITE 1-D | INSTALLATION ABOVE HYDRAULIC GRADIENT |
| 6" | DIP | MECHANICAL JOINT CAP | CONC. METER BOX, FOGTITE 1-D | INSTALLATION ABOVE HYDRAULIC GRADIENT |
| 8" | PVC | PVC CAP W/O GASKET | CONC. METER BOX, FOGTITE NO. 2 (CONC. LID W/ ALUM. INS. PLATE) | INSTALLATION ABOVE HYDRAULIC GRADIENT |
| 8" | DIP | MECHANICAL JOINT CAP | CONC. METER BOX, FOGTITE NO. 2 (CONC. LID W/ ALUM. INS. PLATE) | INSTALLATION ABOVE HYDRAULIC GRADIENT |

NOTES

1. IF POSSIBLE, CLEANOUT TO BE LOCATED JUST ABOVE HYDRAULIC GRADIENT OF LAKE LINE. CLEANOUT SHOULD ALSO BE LOCATED TO PROVIDE EASY ACCESS FOR INSPECTION AND MAINTENANCE BY THE HOME OWNER.
2. SEE S-23 & S-24 FOR BACK WATER VALVE LOCATION.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

SIDE SEWER CLEANOUT FOR LAKE LINE CONNECTIONS

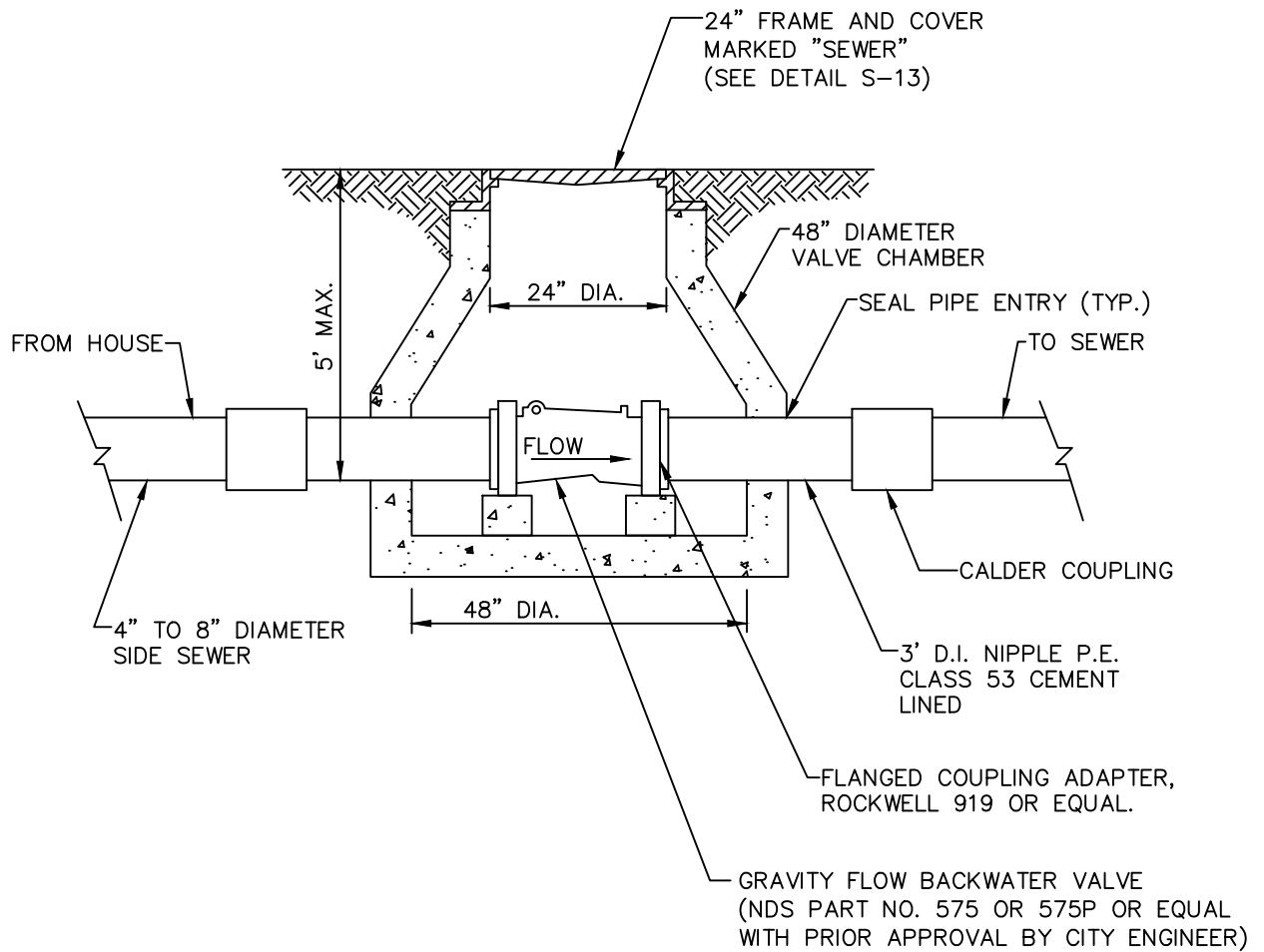
6-5-2009

NO SCALE

S-25

REV DATE

APPROVED



CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER

**BACK WATER VALVE ASSEMBLY
 FOR JOINT USE SIDE SEWER
 (4" OR 6" DIAMETER)**

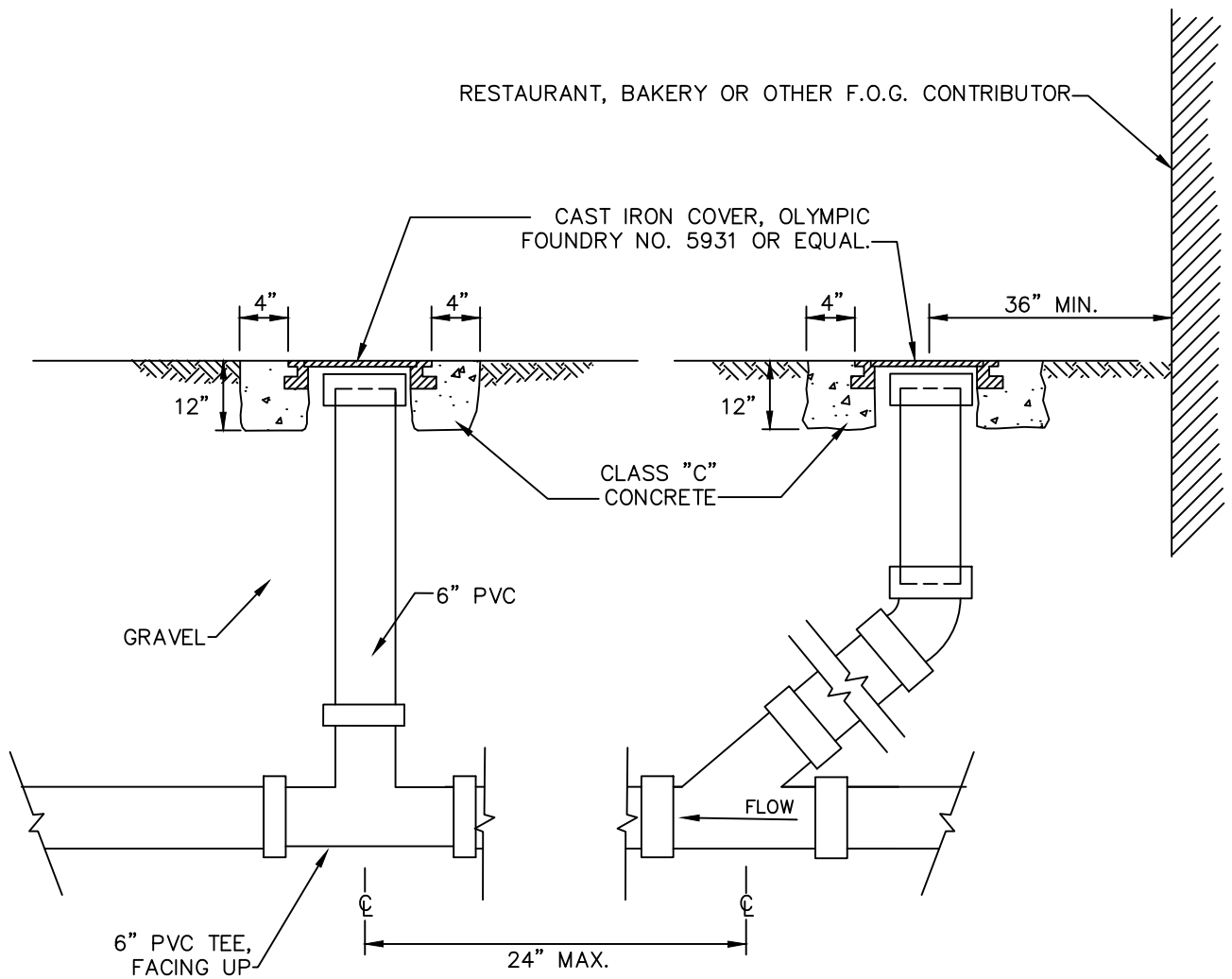
6-5-2009

NO SCALE

S-26

REV DATE

APPROVED



NOTES

1. INSTALL SAMPLING TEE ON EXISTING OR NEW SIDE SEWER.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

SAMPLING TEE

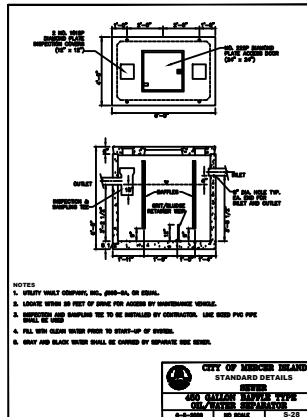
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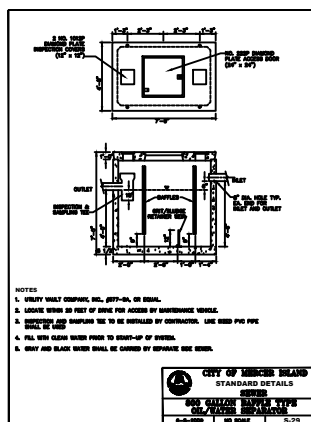
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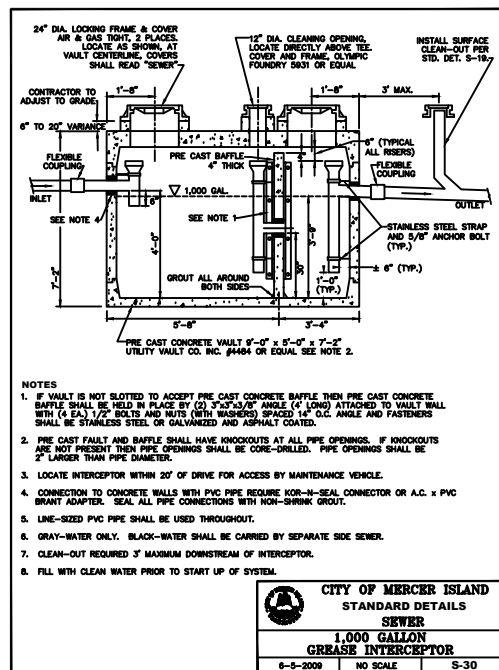
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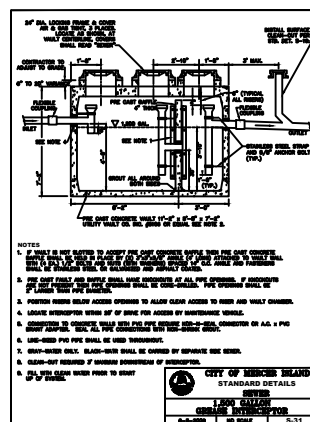
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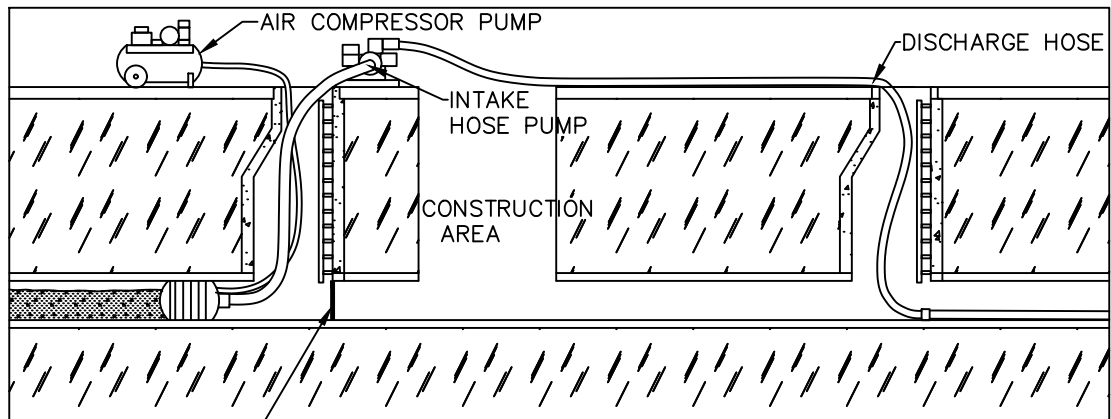
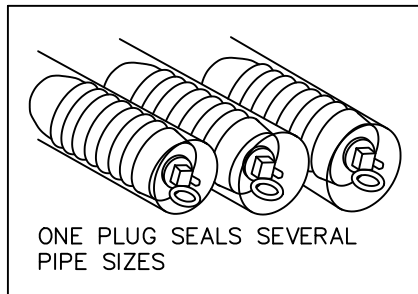
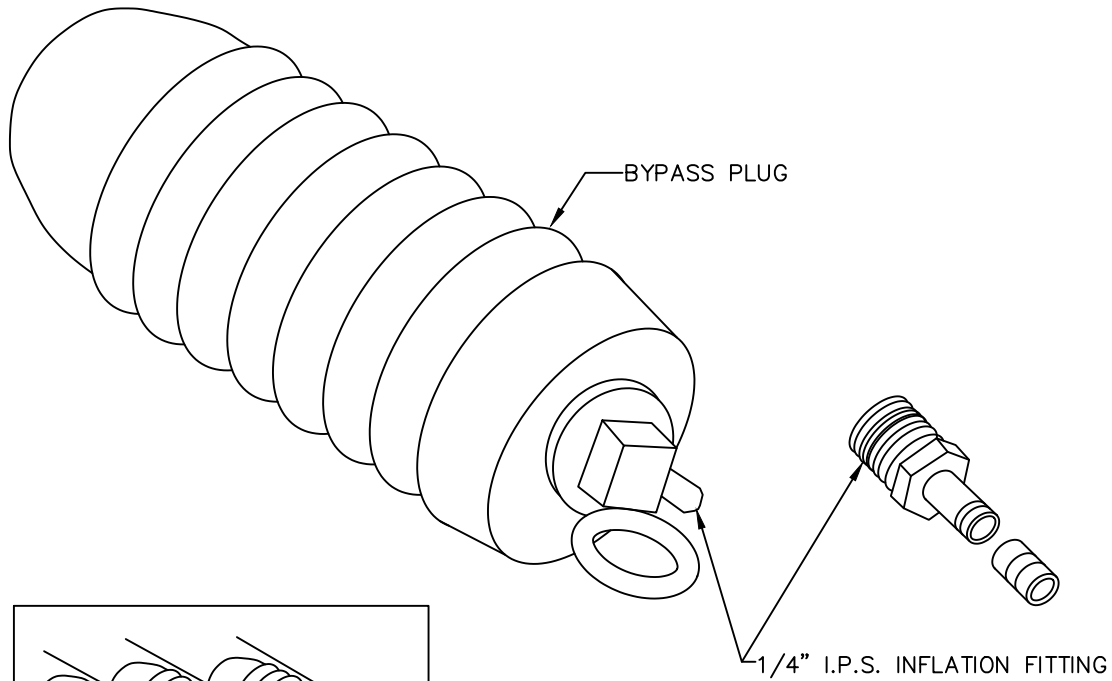
APPROVED











SCREEN MUST BE INSTALLED TO PREVENT
DEBRIS FROM ENTERING MAIN, BEFORE
MANHOLE CAN BE SERVICED.



CITY OF MERCER ISLAND
STANDARD DETAILS
SEWER

SEWER MAIN
BY-PASS PLUG

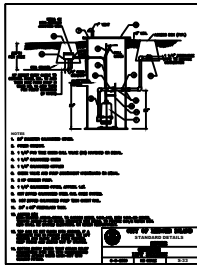
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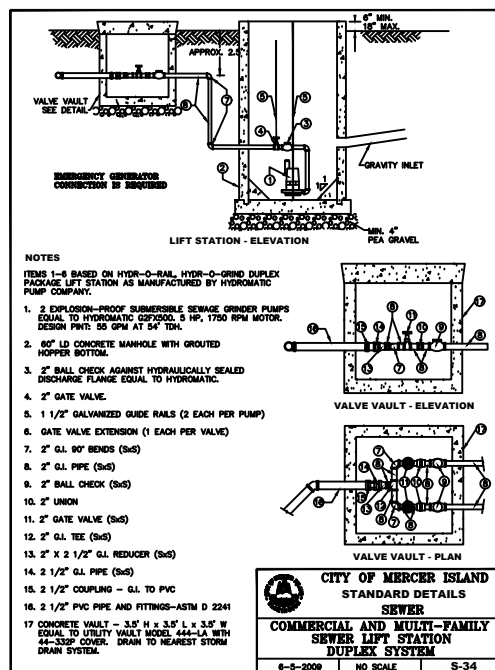
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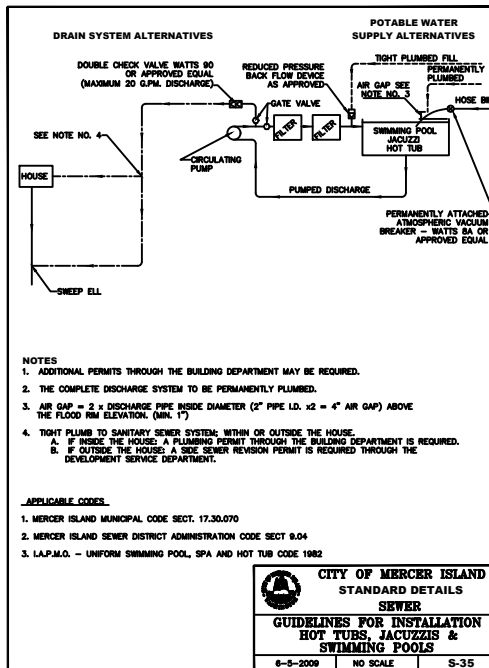
S-32

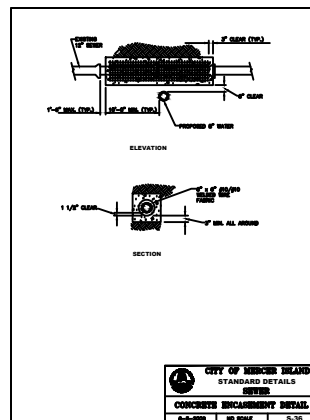
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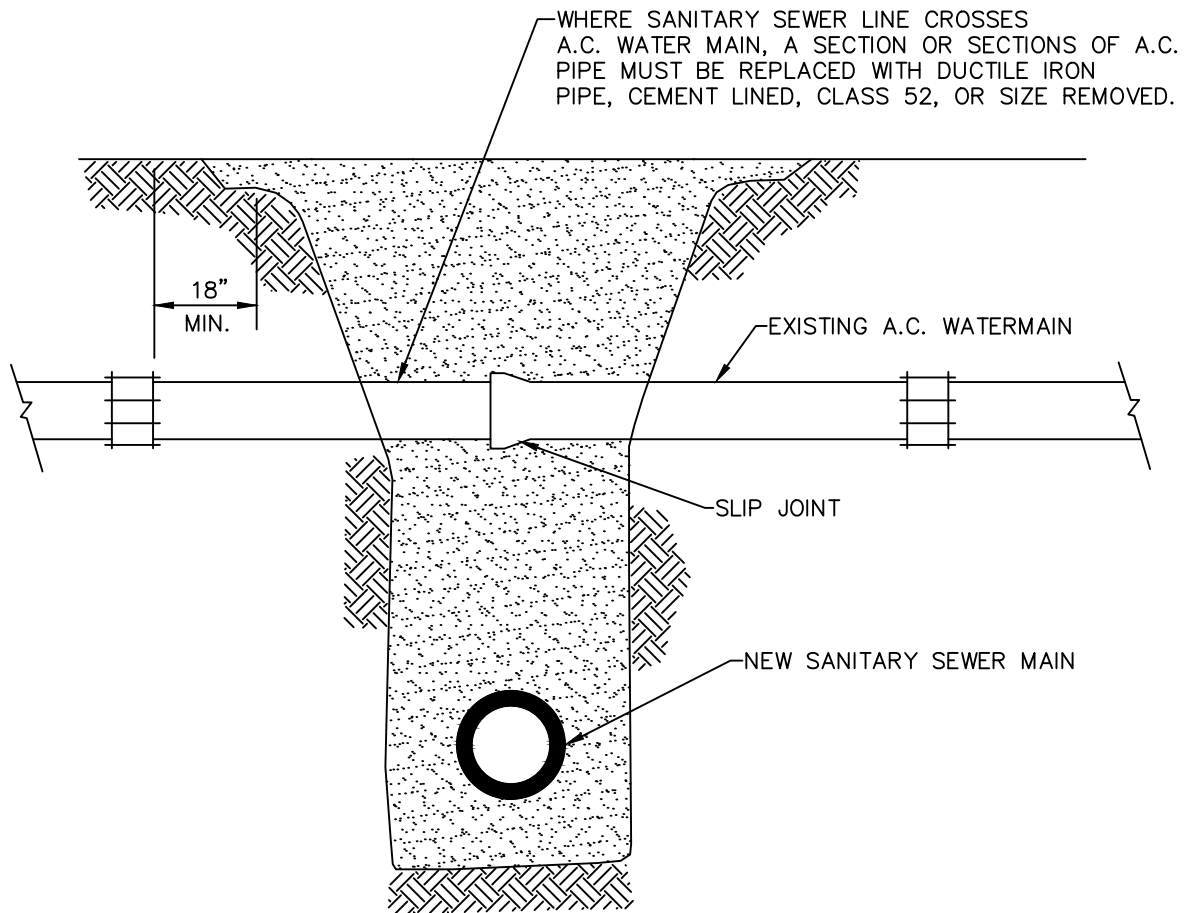
APPROVED











SECTION

NOTES

1. IF A.C. PIPE IS TO BE REMOVED, ALL ENVIRONMENTAL PROTECTION AGENCY RULES, PUGET SOUND AIR POLLUTION CONTROL AGENCY REGULATIONS, AND LABOR AND INDUSTRY REQUIREMENTS MUST BE MET.



CITY OF MERCER ISLAND STANDARD DETAILS SEWER

CROSSING A.C. PIPE

6-5-2009

NO SCALE

S-37

REV DATE

APPROVED

PERMIT NO. 0601-730

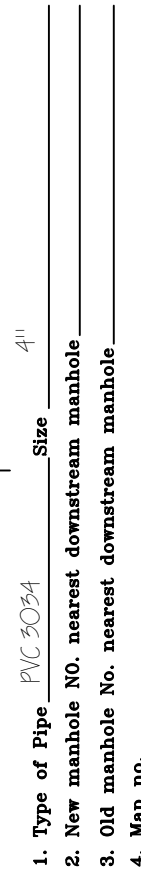
MAIN PERMIT NO.

SKETCH **NTS** \square

Contractor SEWER-R-US

By MIKE F.

Copy Maintenance



| 1. Type of Pipe | PVC 3034 | 4" | Size |
|-----------------|----------|----|------|
| | | | |

2. New manhole N0. nearest downstream manhole.

3. Old manhole No. nearest downstream manhole.

4. Map no. —



"AS-BUILT" DRAWING

S-38

APPROVED